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AUSTRIAN THEORIES OF CAPITAL, INTEREST, AND THE TRADE-CYCLE

By

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PREFACE

WITH the exception of the published translations of the works of Böhm-Bawerk and Wieser, the theories of the Austrian Schools of economics are not well known in England. However, for an adequate understanding of this school the contributions of Mises and Schumpeter are of equal importance and a knowledge of Menger's principles of economics is essential, not only because Menger was himself the founder of this school, and thus greatly influenced Böhm-Bawerk, but also because his investigation of monetary phenomena (and its successful continuation by others such as v. Wieser, v. Mises, and Schumpeter) is so characteristic of the methods of Austrian research.

Attention to the teaching of the Austrian School was recently drawn by Hayek whose examination of the trade-cycle has stirred so much interest and controversy in England. Hayek's main objection to the modern English School of Economics was that these authors have overestimated the significance of monetary phenomena and undervalued the importance of the events in the world of goods. Although we find a general neglect of monetary phenomena in the works of most of the earlier Austrian authors, attempts were later made to combine the purely economic factors with purely monetary factors into a successful theory of the trade-cycle. The object of this thesis will be to study these various attempts and to examine how far they have been successful. We shall find that all these authors have had different conceptions of the role which money plays in the trade-cycle, some authors attributing to money a more active, some a more passive, role. The

problem with which all authors are concerned is whether changes from one equilibrium to another are merely brought about by monetary factors or whether a steady development can be ensured by excluding the somewhat unwholesome influences of money. The earlier teaching of the Austrian School becomes most important for those authors who advocate a policy of neutralizing money. These authors visualize an economic system where the development towards an optimal equilibrium runs smoothly without the disturbing influences of money. But it seems clear that even if one does not adhere to a policy of neutralizing money the study of the events occurring in the world of goods is equally important for any theorist who attempts to solve the problems of the trade-cycle. The problem which any theory of the trade-cycle attempts to solve is the always recurring disproportion between the increase in physical output and the increase in value. The inadequate solution of this phenomenon is the reason for the failure of so many theories. Another common error was the mixing up of two questions ; that of the existence and that of the determination of interest. Böhm-Bawerk for example has solved the question of the existence of interest, but he has not solved the problem of the payment of interest. The question of the payment of interest must be the main subject of any theory of the trade-cycle, i.e. the theory should be an attempt to solve the problem of the temporarily existing disproportion between the increase in physical output and the increase in value or (according to Böhm-Bawerk) the disproportion between physical productivity and value-productivity. The question is whether the profitability of new investments will cover the rate of interest and allow gains to be made. In other words can we regulate our credit-policy so that new investments will always cover interest and allow gains to be made and does a credit-supply by voluntary saving fulfil these purposes under all circumstances.

Such are the problems with which we are concerned in dealing with Austrian theories of capital, interest, and the trade-cycle. The difficulty, however, has been in the first place to select those theories of the Austrian school which were most significant for further investigation, and secondly to put them into some systematic order. In this thesis the material has been arranged after the following scheme. The trade-cycle is characterized by an upward movement which conditions later a downward movement. Thus the unwholesome effects of the downward movement necessitate an examination of their causes which lie in the upward movement. The thesis has accordingly been divided into two parts. The first part deals with the upward movement and the theories of credit and capital by which this movement has been analysed. The second part discusses how Austrian authors attempted a solution of the problems which arise in the upward movement. Those authors have been selected whose names have become significant in the world of economists and whose theories are most characteristic of the development of the Austrian line of thought.

The first part of this thesis is divided into three chapters. The first chapter gives an account of the terminological confusion which prevailed for so long in the Austrian School, and which made it impossible to find an adequate theory of capital and credit. Great emphasis is laid on Böhm-Bawerk's theory of the productive process and his explanation of the function of the fund of subsistence, which are the basis of all further investigations, especially those of Wicksell, Mises, Hayek, and Engländer who have further advanced Böhm-Bawerk's ideas. The second chapter deals with the attempts of Austrian theorists to fuse monetary and economic phenomena into an explanation of the trade-cycle. Thus it deals with Menger's theory of the popular notion of capital and Wieser's attempted solution of changes in equilibria which prepared the ground for Schumpeter's later

discoveries. The third chapter deals with Austrian theories of credit from Menger to Schumpeter.

It points out the fundamental difference between a static and a dynamic stage of the economic system and examines the possibility of a completion of Schumpeter's theory.

The second part is also subdivided in three chapters. The first chapter deals with Böhm-Bawerk's theory of interest and explains why we may consider this to be a non-monetary theory of the trade cycle, for although Böhm-Bawerk explains why interest exists he does not solve the problem of the payment of interest, his non-monetary conception of interest therefore leading to circular reasoning. The second chapter examines the monetary form which Schumpeter has given Böhm-Bawerk's theory and its attempt to consider interest as a dynamic problem. The third chapter deals with Mises's, Hayek's, and Engländer's theories of the trade-cycle. It shows that Mises has realized the significance of the movements of the relative prices of commodities from explanation of the trade-cycle, and that his theory of forced saving and refutation of the old quantity-theory is the outstanding achievement of Austrian economists. Mises nevertheless is aware that too great a readiness on the part of the banking system to grant credits can lead to crisis and his examination of changes in the structure of production has influenced Hayek who, although advocating a policy of neutralizing money, bases his propositions on Wicksell's theory of the divergence between the equilibrium-rate and the money-rate of interest. Money-loans according to Hayek will be neutral towards the relative values of goods provided that the money-loans granted to the producer are restricted to actual saving deposits and provided that the quantity of money has remained unchanged. Engländer's theory is contrary to Hayek with regard to changes in the money-supply and with regard to Hayek's theory of saving.

No serious student of English economic theory can afford to ignore contemporary continental research. Not only should it receive consideration in the formation of English theory, but its neglect has even caused a neglect on the part of the English School of proper consideration of purely economic factors and too great an emphasis on purely monetary problems.

BOOK I

INTRODUCTION

THE NOTION AND THEORY OF CAPITAL

THE authors who deal with capital and capitalism have often misunderstood the function of capital, and have therefore wrongly conceived their subjects. In particular, the Austrian School of Economists, with the exception of Schumpeter¹ and Menger, have neglected the monetary aspect of capital. In trying to penetrate to the root of the monetary question, they have failed to appreciate the fundamentals bearing on it.

A study of the history of the theories of interest would assure us that the notion of capital has varied with the conception of interest. Interest was considered as existing in concrete goods, and as being synonymous with every increase in the physical output of production. However, some authors soon realized that interest bears only a certain relation to the increase in physical output of production and that interest represents mainly a problem of value, and it was therefore necessary to find the real connection between productivity and interest. An attempt was made to establish this connection by including goods in the notion of capital. It was evident that physical productivity depended on goods, but it was also equally obvious that the increasing physical

¹ Bibliography: Böhm-Bawerk, ii, 1, pp. 17-104. Schumpeter, *Theorie der wirtschaftl. Entw.*, pp. 141-171, etc. Schumpeter's and Böhm-Bawerk's article in the *Handw. d. Staatsw.* Sombart, *Der moderne Kapitalismus*. Menger's article in the *Handw. d. Staatsw.* Marshall, *Principles*, pp. 71-5, etc. Keynes, *A Treatise*, pp. 1-15, 53, 76, 262, 293-302, 137. Irving Fisher, "the rate of interest" objections considered, "Nature of Capital" and "Senses of Capital" in the *E. J. Böhm-Bawerk, Exkurse*. v. Philipovich, *Grundriss*.

output and the increase in value were not always identical. The attempt was therefore made to find a notion of capital which fitted all explanations of interest.

Two kinds of goods appear to be suitable for the purposes of a theory of interest : producers' goods which enable the undertaking of more productive methods of production and consumers' goods, the possession of which makes possible the employment of labourers without resources and the undertaking of more productive methods of production. The explanation of *interest* according to the old productivity theories includes producers' goods in the notion of capital because of their innate faculty of enabling an increase in physical output or an improvement of the product. In his criticism of the old productivity-theories of interest Böhm-Bawerk had pointed out that their failure mainly consisted in explaining interest by a mere increase in physical output. They should have been aware that the increase in physical output was not always followed by an increase in value, in fact that the problem of the trade-cycle consisted in the explanation of this discrepancy. The problem as Böhm-Bawerk has often suggested, would have been solved by finding the value-productivity of goods. The value-productivity of capital is the faculty of producing more value, that is to say either more value than the actual rate of interest or more value than the value of the applied means of production but less value than the actual rate of interest.¹

The task of the economists is to examine the relation of the increase in value to the actual rate of interest, and the cause of the recurring discrepancy between physical and

¹ Compare Böhm-Bawerk, *Kapital und Kapitalzins*, i, 2nd edition, pp. 128, 129, 130 ff. The notions of physical and value-productivity are unfamiliar to the English literature, and were introduced by Böhm-Bawerk. We will always use these terms if we refer to phases in the trade-cycle where such discrepancies between the increase in physical output and the increase in value occur. This appears to be the correct interpretation of Böhm-Bawerk's terms, although his neglect of monetary phenomena has led to an incomprehensible way of expressing himself.

value-productivity. Böhm-Bawerk would have been more successful in his examination of this value-productivity if he had questioned wherein lay the discrepancy between physical and value-productivity. He might then have found that this discrepancy was the result of the dynamic influences of money for as we shall see later money-costs do not fall as fast as the prices of the finished product. Such therefore is the problem of the discrepancy of physical and value productivity, translated into monetary terms.

The examination of the function of the fund of subsistence on the other hand should have brought Austrian economists nearer to the true explanation of interest. The possession of a fund of subsistence enables the employment of labourers without resources, and the disposal of the means of production necessary to carry through methods of production yielding greater output. Modern research has attempted to prove that in a money-economy money exercises the function of the fund of subsistence. The problem which has to be decided consists in an examination of the true function of money and its relation to the world of goods, an understanding of the events of the trade-cycle otherwise being impossible. Such an examination would have shown that money influences different categories of goods differently and that the factor determining the supply of these different kinds of goods is the rate of interest. The fluctuation of the rate of interest is the cause of the upward and downward movements of our economic system. In order to understand the cause of these movements an examination of all the factors, monetary and non-monetary, determining the rate of interest is necessary. The examination of non-monetary factors, that is to say of the real structure of our economic system, enables us to find how a smoothly-running development¹ could be obtained. The examination of monetary

¹ The fluctuation of the rate of interest is a result of the different reaction of the banking-system towards economic changes. The credit-supply of

factors demonstrates how the banking system by its credit-supply influences the productive activity of a country and how it creates the upward movement of our economic system.

the banking system is entirely arbitrary, that is to say it does not obey the commands of a natural development. (See the chapter on Hayek where this line of thought is more fully discussed.)

CHAPTER I

THE DEVELOPMENT OF THE NOTION OF CAPITAL WITH REGARD TO THE THEORIES OF C. Menger AND BÖHM- BAWERK AND THEIR CONCEPTION OF THE FUNCTION AND FORMATION OF CAPITAL

§ 1

THE importance of the problems, discussed above, has compelled some Austrian economists to decide which kind of goods should be included in a notion of capital. C. Menger and later Böhm-Bawerk have clearly conceived *the importance of the possession of goods of higher order* for the undertaking of more productive methods of production, and *the function* which the fund of subsistence plays in the productive process.

Producers' goods are necessary to conquer Nature and to increase the physical output of production with the aid of Nature ; a fund of subsistence may be necessary to enable a production on a larger scale. It was Menger's analysis of the economic system which gave rise to this distinction and has influenced Böhm-Bawerk in his theory of the productive process.

Some authors¹ have maintained that Böhm-Bawerk has merely clarified Menger's ideas and has composed from these and from Rodberthus's conception of the roundaboutness

¹ Compare Martin Hill, "The Period of Production and Industrial Fluctuation," p. 600, *E.J.* "It should be noted, however, that almost every element in Böhm-Bawerk's exposition is to be found in previous writings, and that he added little but clarity to that of C. Menger." Undoubtedly Menger has strongly influenced Böhm-Bawerk and even Schumpeter.

of production a suggestive picture of the productive process. We only endeavour to show how Menger's ideas are related to those of the other Austrian school and why they induced the latter to use different notions of capital.

With Menger dawns new light on the relation between human beings and the world of goods. Goods are means for the satisfaction of our wants, and any of our economic actions are undertaken in order to fulfil these purposes. The relation to human satisfaction can be a direct or an indirect one. Therefore an abstract grouping of existing goods can be made according to the distance in time from the consumer. Menger distinguishes accordingly between two kinds¹ of goods, goods of the first order which yield immediate satisfaction and goods of a higher order which serve the production of goods of the first order and so indirectly are relevant to our satisfaction.²

Goods of higher order determine the amount of goods of first order being produced. They, therefore, are significant for the degree of productivity of a country. But they derive their quality of being goods from goods of first order, as only by enabling the production of goods of first order can they serve the satisfaction of our wants. They serve the production of goods of first or lower order in two ways : either one kind of goods of higher order is sufficient for the production of the goods of first order, or a complementary amount of other goods of a higher order is needed, facts from which Menger derives the following conclusions :—

(1) Complementary goods of higher order lose the quality of being goods if one kind is missing.

(2) The possession of all complementary goods is necessary

¹ Compare Menger, *Grundsätze d. Volkswirtschaftslehre*, 1st edition, pp. 9, 12 ff., 15.

² Goods of this higher order are differentiated according to their distance in time from the consumer. Accordingly the term "higher order" is reserved for remote goods, and the term "lower order" is used to denote goods nearer to the consumer. We refer to both meanings if we speak merely of goods of the higher order. Goods of the higher order and goods of the lower order signify different stages of production.

for the production of a certain article, a fact the bearing of which on modern theory we shall see later.¹

Examining the conditions for the most complete satisfaction of our wants Menger was aware that the amount of goods of the first order was insufficient and that we have to provide for the future. The value and prices of goods depends on their relation to our human satisfaction. We therefore need to be aware of the amount of goods which is available for our present enjoyment and the amount we need for a more deferred satisfaction.² Menger claims that the demand³ for goods of first order can be measured to a certain extent although we are uncertain about the total sum of our future wants considering their possible growth and development. Accordingly we distinguish between the demand⁴ for goods of the first order and the supply available to satisfy this demand, and the demand for a greater, but more deferred, enjoyment. The scarcity⁵ of the present means of our satisfaction obliges us to provide for the future. Menger's further task was to show *how one obtains the most complete satisfaction from the means available*.

He found that the transformation of goods of the higher order to goods of the lower and first orders enables us to

¹ An examination would have been necessary: what enables the possession of complementary goods of higher order? One would then have realized the rôle money or the fund of subsistence plays in the trade-cycle. Menger has not fully developed this line of thought, but occasional remarks show that he is near the solution, advocated by modern theory. Modern theory and even Böhm-Bawerk insisted that interest is paid for the disposal of the means of production, with the aid of which we can introduce roundabout methods and innovations.

² Compare pp. 40, 41, 15, 124, 129, etc. We abstain from giving a detailed account of Menger's theory of value, and refer to this theory inasmuch as it is necessary for the understanding of Menger's theory of capital and the productive process.

³ The ambiguous German term "Bedarf" is best translated by the English word "demand". We even can often substitute "Bedarf" more adequately by "Nachfrage" in Menger's writings. The term "requirement" does not seem to be appropriate. Compare Engländer's criticism in Schmoller's *Jahrbuch*, p. 26, Heft 192, 1923, of Menger's ambiguous use of the term "Bedarf".

⁴ Compare pp. 23, 35, 40, 41, 126-8 of Menger's *Grundsätze*.

⁵ Menger has made little use of this idea which is so fundamental for the explanation of interest. Later Böhm-Bawerk has successfully continued this line of thought. (Compare his theory of interest.)

increase the physical output of goods of the first order. Reasoning with Adam Smith he holds that not only a perfect division of labour but the human victory over nature is the basis of further development. The construction of goods of the higher order empowers us to dominate nature. It is necessary to employ goods of the lower and first order, which were destined for present uses or uses in the nearest future, for deferred periods. This process is limited by the scarcity of means to satisfy present uses or uses for the nearest future.¹ *The above makes it apparent that goods of higher order are holders of future productivity, and the amount of these goods that a person possesses controls his future prosperity and are therefore his capital.*

Like Böhm-Bawerk, Menger uses this conception of the productive process for the explanation of interest. Menger saw the connection between productivity and interest but he also was aware of the important role which the disposal of the means of production (goods of higher order) plays for the explanation of interest.

Capitalistic production requires that we not only dispose of the goods of higher order during the time of the transformation of goods of higher order into goods of lower and first order,² but that we dispose also of all complementary goods of higher order.

Menger, like Böhm-Bawerk, realized that the transformation of goods of higher order into goods of lower and first order requires time, although the time varies in every production. In contrast to Böhm-Bawerk, Menger does not assume an average period of production, he only considers the time

¹ This line of thought was more elaborated by Böhm-Bawerk. At this stage the distinction between the inclusion of producers' goods or consumers' goods in a notion of capital becomes relevant. Böhm-Bawerk in his *Exkurse* mentions that the possession of a fund of subsistence is indispensable if we do not want to die of starvation during the long time elapsing between the beginning of the productive process and its completion.

² Compare Menger, *Grundsätze der Volkswirtschaftslehre*, pp. 126, 127, especially p. 136 n., pp. 21-5, 149-150, 130-1, 134-6, 137, 138.

direct labour is applied. The disposal of complementary goods of higher order during a certain space of time will explain the discrepancy of value between the means of production and their product in which interest is hidden. As goods of higher order derive their quality of being goods from goods of first order, the value ¹ of goods of first order must determine the value of goods of higher order. Nevertheless the equality of value between the means of production and their product is disturbed, and it became necessary to seek for the cause of this disturbance. The cause of this disturbance is the payment of interest. Menger explains that the buyers of goods of higher order only can pay a lower price than the price obtained for the future product as they must subtract from this price the value (price) of the disposal of these goods. But Menger adds that the value of the product contains another element, the price of entrepreneurial management.² If we translate Menger's doctrine in modern terminology we might interpret the above observations in this way:—

Goods of higher order are bought by entrepreneurs, who

¹ Menger's failure in solving problems of the trade-cycle consisted in using his conception of value for such explanations. The error, common to all the older Austrian School of economists, was to assume an identity of value between the means of production and their product. By substituting prices instead of value in our context we come nearer to the solution which Schumpeter has given to the problem of interest and profits. We would then find that the price obtained by the sale of the product is not identical with the price paid for the means of production, the reason being, as Menger correctly has pointed out, that the price obtained by the sale of the product must contain the price paid for the disposal of these means of production and the price of entrepreneurial management. Schumpeter has further advanced this theory by explaining why a price has to be paid for the disposal of complementary goods of higher order. The correct interpretation of the old use-theory is therefore, as also Wicksell has pointed out, that interest is paid for the acquisition of capital-goods which we acquire with the intention of reproducing them or goods of similar kind. If the use of any kind of goods consists in the acquisition of others or goods of similar kind, this use determines a rate of interest which reciprocally determines the value of these goods. (Compare Wicksell, *Über Wert, Kapital und Rente*, 1894, p. 88 ff.)

² Menger more clearly elaborates the connection between entrepreneurial gain and interest. Böhm-Bawerk treats interest separately, neglecting too much the most important correlation between them which leads to the right solution.

produce goods of lower and first order because these goods are wanted by the consumer. In order to make a gain the price of goods of lower order must contain two elements, the price of the disposal of complementary goods of higher order and the price of entrepreneurial management. This line of thought corresponds exactly to the meaning Schumpeter has given the Austrian theory of interest.¹

This examination of Menger's theory makes it apparent that any further investigation will have some difficulty in applying a correct notion of capital. Although unconsciously Menger seems to use two notions of capital, he first defined capital as those sums of goods of higher order which while available in the present are destined for future purposes. In this definition he considered capital as the source of future productivity. On the other hand Menger was aware that he could not explain interest with this notion because an increase in physical productivity does not imply an increase in value² and it is the increase in value which has to be explained. Therefore he explained interest as the price paid for the possession of goods of higher order. But also Böhm-Bawerk attributed to this "capital-disposal" the explanation of interest.³ The specific role which the fund

¹ Menger has not given the necessary clarity to his ideas we find in modern theory. The reason was his neglect of monetary phenomena. How far he has reached the standard of modern theory and how much he has anticipated Schumpeter is proved by his following footnote: "In der weitaus größeren Mehrzahl von Fällen bestehen Kreditgeschäfte in der Hingabe von Gütern höherer Ordnung, an diejenigen, welche sie zu entsprechenden Gütern niederer Ordnung verarbeiten. Durch den Kredit wird die Produktion, oder doch der umfangreiche Betrieb sehr oft erst ermöglicht, und daher die verderbliche Stockung und Beschränkung der produktiven Tätigkeit eines Volkes, wenn der Kredit desselben plötzlich versiegt" (p. 135). "In other words the price of goods of higher order can also be credited and this credit is the cause of any productive activity of a population. 'The bearishness' to grant credits can cause stagnation, or at least limit the productive activity of a population."

² Vide Book II, and the section dealing with Schumpeter's concept of capital.

³ Compare Martin Hill in the *E. J.* of December, 1934, on Böhm-Bawerk's theory of interest. "Capital in the context is of course capital-disposal or free capital of which the real counterpart is the subsistence-fund."

of subsistence plays in capitalistic production is the factor determining interest. This makes it necessary to examine the form which Böhm-Bawerk has given C. Menger's theory of the productive process.

§ 2

Böhm-Bawerk contributed to Menger's theory of the productive process a careful elaboration of the time factor and a most complete theory of the formation and function of capital. The aim of production, he holds, is the utmost satisfaction of our wants. As the means of satisfaction are scarce, the problem arises for us of providing them. This is best done by utilizing the productive services of land and labour. The method of applying them can be a direct or an indirect one and for the following reasons a roundabout method is applied :—

(1) The insufficiency of a direct application of human labour to make the most complete use of the natural forces.

(2) The attainment of better results than were possible by a direct application of human labour. (We are even able to produce goods which no direct method could produce.)

(3) The possibility of a perfect division of labour with the result that we may produce in a shorter time and *increase the output of production*.¹

The reasons have been sufficient to establish roundabout production everywhere. Therefore capitalistic production is characterized by the amount of productive forces which are destined for more deferred periods of time. Böhm-Bawerk formulates accordingly a notion of social or productive capital. Capital, he says, are those intermediate or

¹ In the above three points, consists the so-called greater productivity of roundabout methods. (Die "Mehrergerbigkeit der Produktionsumwege"). Compare Böhm-Bawerk, 2, 1, pp. 3-11; 1. Buch, 1. Abschnitt, and 2. Buch, 1. Abschnitt, pp. 107-111.

produced means of production which are destined for a deferred, but more complete, satisfaction of our wants.¹ Like Menger, Böhm-Bawerk considers capital as significant for future productivity. The more "capital" is applied, the smaller will be the amount of productive forces which is consumed. A large quantity of the current year's productive forces is invested in means of production the products of which will be consumed in future periods. In a capitalistic system of highest degree, productive forces of other years only are consumed, whilst the current year's productive forces are invested in means of production or in intermediate products. An enterprise applying less producers' goods will produce consumers' goods in a shorter time than an enterprise applying more producers' goods. But in the long run the technical output will be smaller. The disadvantage of roundabout production is the time it requires. Böhm-Bawerk then makes clear which time is relevant for the determination of the duration of the productive process.

It is necessary to distinguish ² between the time required for the production of the intermediate products and the time required for the transformation of goods of higher order into goods of first order.³

¹ Böhm-Bawerk has adopted Menger's notion of capital and his idea that producers' goods or goods of higher order are characteristic of capitalistic production. (Capitalistic production is a term introduced by Böhm-Bawerk.)

² This distinction is not always noticeable in Menger's work.

³ Compare p. 117, note 1, B.B., ii, pp. 318 ff., 399, *Positive Theorie*. Compare also Marshall, *Principles*, pp. 378-9, 348, 348-350, 359-360, 369-380, 424, 260-2, etc. *The question is which is the time relevant for a theory of the trade-cycle.* Cassel considers every stage of the productive process as independent and the time this process requires as the period of production. Menger again only considers the time required for the transformation of goods of higher order into goods of first [or lower] order as relevant for a theory of interest. The solution of these different concepts of the duration of the productive process, I think, can easily be found. Menger described the time relevant for the existence of interest. Interest is the price for the capital-disposal during this time, but the time which elapses between the successive application of original factors of production and the finishing of the product indicates whether interest can be paid. An authority on the question between long and short periods is Marshall. If I understand his theory well, his theory clearly refutes Cassel's proposition.

Böhm-Bawerk proposed the following solution of the problem of measuring the time necessary for the completion of the productive process. He distinguishes an average-period of production of a single consumption good which is the average-time elapsing between the successive doses of original factors of production which have contributed to the present supply of consumption goods, and its completion. A lengthening of the average-production does not necessarily mean any lengthening of the time between the first and the last application of resources (*the absolute production-period*), but merely an increase in the proportionate expenditure of resources at the earlier stages, or in other words *an increase in capital used*.¹ If the production of a consumption good requires 100 work-days, and if one day is applied 10 years before, another 9 years before, etc., and the remaining 90 immediately before the finishing of the product, it is obvious that the first work-day is rewarded in 10 years, the second in 9 years, the third in 8 years, and all other 90 work-days immediately and that therefore all work-days are compensated in an average time of

$$\frac{10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1}{100} = \frac{55}{100} = \frac{1}{2} \text{ year.}$$

If on the other hand the production of a commodity requires 100 work-days in a period of 10 years and if in the first of

Only the long period, he holds, can indicate whether investment has been undertaken successfully. This problem concerns not *only the factors of production of a single commodity*, but also *the factors of production of these factors of production*. In the long period we can decide whether it is worth while to continue production, and whether the price paid for the product will cover all cost, including the rate of interest.

It is, therefore, correct to consider the whole period of production of a consumption good. The problem to be solved is the measurability of such a period.

¹ Compare Wicksell, *Über Wert, Kapital und Rente*, 1893, pp. 90, 91, etc. Wicksell discussing Böhm-Bawerk's theory states that any increase in fixed capital means an increase in the length of the average-period of production. It means that a greater number of labourers is employed in higher stages. (Compare also Böhm-Bawerk, ii, p. 118, n. 1.)

these 10 years 20 work-days, in the second 20 work-days, from the third to the tenth year, each year, 5 work-days are applied and if the last 20 work-days are applied immediately before the finishing of the product, the average period of production would be different and greater, that is to say it would amount to

$$\frac{200 + 180 + 70 + 35 + 30 + 25 + 15 + 5}{100} = \frac{560}{100} =$$

to more than $5\frac{1}{2}$ years.

Martin Hill,¹ to whom we are indebted for carefully having examined how Böhm-Bawerk tries to solve the time-factor in the roundabout process, most exactly defines the aim of introducing the concept of an average period. Böhm-Bawerk uses the average period in both of the following senses :—

(1) "As the 'time' which results from tracing the dates at which the original factors contributed *in the past* to produce the present output of consumption-goods and

(2) "as that which results from considering at what time in the future the products of the present stock of resources will emerge in consumable form,"² with the intention of comparing the degree of roundaboutness which has been applied, and the degree of roundaboutness which will be applied. This comparison enables an examination of the degree of the productivity of the roundabout method. It enables us to decide whether the yield of the roundabout

¹ Compare *E. J.* from December, 1933, on "The Period of Production and Industrial Fluctuation," p. 602 ff.; also Marshall, *Principles*, pp. 376 ff., 345 ff., 421, and Böhm-Bawerk, ii, pp. 118-120, 399 ff.

² The distinction is important for Hayek's theory of the trade-cycle, which is based on Böhm-Bawerk's observations, especially about the profitability of roundaboutness. The problem is whether Böhm-Bawerk's assumptions are appropriate for the short period, and whether short period fluctuations exercise the same influence on the structure of production as they do on money. Hayek, I think, has not laid enough emphasis on the time which must elapse during the transformation of goods of higher order into goods of lower order. Only this time seems to be relevant for monetary phenomena.

method which is to be applied is in proportion to the degree of roundaboutness applied.

With regard to the future another time of importance is the average-period of waiting.¹ The average-period of production and the average-time of waiting are not identical. Böhm-Bawerk who tries to correlate these two terms fails in his attempt. The reason is that Böhm-Bawerk does not clearly define the meaning of his notions, which fault accounts for the many errors of his theory. When the question of the introduction of greater roundaboutness is to be decided, he never clearly explains whether he means the average-time of waiting of all industries as a whole or of a single industry.² The reason of this inconsistency is the different meaning Böhm-Bawerk attaches to the fund of subsistence. He uses this term in two senses : He means the National fund of subsistence when he determines the height of the rate of interest, he speaks of the fund of subsistence at a person's disposal when he explains the existence of interest. It must therefore be pointed out wherein the correlation lies between the fund of subsistence and the length of the productive process. The person who applies roundabout methods, Böhm-Bawerk explains, must wait before he can consume the product of his production. He must dispose of a certain fund of subsistence during this time of waiting. It therefore can easily be realized that lengthening methods can only be applied if the fund of subsistence is sufficient. The lack of a fund of subsistence makes it impossible for the labourer to carry through his own production. A person who undertakes new investment has to

¹ The average-period of waiting is *the time between the payment of labour and the sale of its product*.

² He also never clearly expresses whether the average-period of production is meant to be the average-duration of all productions as a whole. If I interpret Böhm-Bawerk directly, his first formula is supposed to determine the average-length of the period of production of a certain consumption good, but it is never quite apparent whether Böhm-Bawerk uses this term in either or both senses.

buy the disposal of the necessary fund of subsistence. The fund of subsistence, therefore, determines the length of the roundabout method which is to be applied. The question which concerns us here is how can we measure the prospective time of waiting for the finishing of the product in order to know the length of the roundabout method to be applied? As the length of a roundabout method is determined by the fund of subsistence it is necessary to find a formula which indicates the magnitude of this fund of subsistence. But Böhm-Bawerk fails to answer this question. He does not distinguish sufficiently between the National fund of subsistence and the fund of subsistence which is at the disposal of the person who intends to introduce greater roundaboutness. Böhm-Bawerk does not make sufficiently clear whether he intends to determine the average-time of waiting of all industries as a whole, which would be determined by the National fund of subsistence, or the average-time of waiting for a single industry which would be determined by the fund of subsistence which is at a person's disposal. Böhm-Bawerk seems to determine the average-period of waiting for a single industry, but it is never quite evident whether he does not mean the average-period of waiting for all industries as a whole. What he wants to express and what he does not express in his formula is that the National fund of subsistence determines the magnitude of new investment (roundaboutness), and that the person who expands production in a certain industry can only have a certain share ¹ of this National fund of subsistence. Böhm-Bawerk, however, has not clearly explained the correlation between these magnitudes and we are never certain whether

¹ The question is whether the length of the productive process will be the same for all industries. This is impossible, as some industries have a greater, some a smaller, share of the National fund of subsistence. These facts should have induced Böhm-Bawerk to inquire why some industries have a smaller, some a larger, share of the National fund of subsistence. He might then have realized that the credit-supply of the banking system is responsible for this distribution.

he correlates the average-time of waiting of a single industry to the average-period of production of all industries or whether he intends to correlate the average-time of waiting of all industries to the average-time of production of all industries.

The solution which Böhm-Bawerk proposes is the following : It must be remembered, he holds, that, due to the division of labour, labour can be applied successively ¹ (*staffelweise*). It is accordingly unnecessary that the fund of subsistence must suffice for the whole period of production. The labourers employed in a certain trade need not be employed at the same time and at the same stage. Supposing that a production lasts 5 years. It is obvious that the labourer of the first stage of production will have to wait for his product 5 years, the labourers at the second stage 4 years, etc. To work in an average-period of production of 5 years it is not necessary to have a fund of subsistence for all these 5 years of waiting, but only for an average-time of waiting, that is to say (in our example) for

$$\frac{5 + 4 + 3 + 2 + 1}{5} \text{ years} = 3 \text{ years,}$$

which is more than half of the average-period of production.

Böhm-Bawerk however shows in his example that the time of waiting equals nearly half of the total period of production. The law which he claims that determines the fund of subsistence necessary for the application of a lengthened period of production is the following : the fund of subsistence must be sufficient for half of the average period of production plus half of the duration of that stage of which the social structure of production is composed. This law stated in more general terms means that the fund of subsistence must be equal to $\frac{x + 1}{2}$ stages of production if an

¹ Compare Böhm-Bawerk, ii, 1, *Positive Theorie*, pp. 397-9.

average-period of production contains x -stages of production. But the average-period of production in this formula is the average-period of production of all industries as a whole and Böhm-Bawerk has really given the law measuring the average-time of waiting of all industries as a whole instead of determining the average-time of waiting for one industry.

However Böhm-Bawerk is not justified in stating that if x is great this formula approaches more and more closely half of the average-period of production, and that x is the greater the longer the average-period of production and the more perfect the social structure of production ¹ (*gesellschaftliche Staffellung*), and that a population can increase the period of production to nearly twice the period which is covered by the accumulated fund of subsistence. Even if we can measure the average-time of waiting of one industry, we have not found the law which determines the necessary fund of subsistence.

Böhm-Bawerk neglects that *two factors in his formula are not sufficiently determined* :—

(1) The magnitude ² of the National fund of subsistence is unknown which determines the share of the person who intends to undertake new investment.

(2) As the share of the individual is different for different persons and for different industries (some requiring a greater, some a smaller, share), it is accordingly necessary to know the magnitude of this share, and to examine whether this share is in proportion to the intended extension of the roundabout method. •

To make this more explicit Böhm-Bawerk attempted to solve the length of the average-period of waiting, but the above formula does not indicate whether the available fund of

¹ Compare *Exkurs*, xiv.

² The same criticism holds true for v. Mises's theory which has adopted Böhm-Bawerk's reasoning.

subsistence is in proportion to the intended extension of the roundabout method. The fact that different industries have different shares of the National fund of subsistence makes also clear that any extension of the roundabout method in one industry goes at the expense of another industry unless the National fund of subsistence has increased. Investment, therefore, should not be undertaken unless the fund of subsistence is sufficient to enable this development. It is equally possible however that investment (roundaboutness) is not undertaken unless an increase of this fund is expected. With every increase of the National fund of subsistence, further development is made possible. The National fund of subsistence therefore determines the magnitude of further investment. An increase of the National fund of subsistence enables further investment, a decrease compels us to abandon lengthening methods. The problem is how can the fund of subsistence be increased.

For these reasons Böhm-Bawerk may more carefully have elaborated the formation of capital.

Böhm-Bawerk emphasizes the importance of saving for the economic system. He however neglects the monetary side of the problem. An examination of the nature of capitalistic production, he holds, clearly indicates the function of capital. But like Menger he must drop his former notion of capital. The notion Böhm-Bawerk introduces is more relevant for the development of modern theory because it approaches more the monetary side of the problem.¹ The function of capital is to enable the application of roundabout methods. Capital is necessary to allow time to elapse between the beginning and the end of the productive process. But here Böhm-Bawerk has to overcome the difficulty of deciding which kind of goods enable

¹ Compare Schumpeter on this subject and the second part of this thesis which more carefully deals with this connection.

the application of roundabout methods ; consumers' goods ¹ because they empower us to purchase producers' goods or producers' goods which help to increase the physical output of roundabout production. Only with the aid of consumers' goods can we employ the productive services of land and labour. On the other hand producers' goods are the condition for the increased physical output. After having examined the function of different categories of goods and having attributed to different categories of goods the term "capital" it was also necessary to consider the growth of capital. According to his different concept of capital which is due to the inclusion of goods into a notion of capital Böhm-Bawerk assumes that capital is saved as well as created.²

According to Böhm-Bawerk's theory of capital-formation we first must abstain from consuming before we can apply a time-requiring process of production. The consumption of the present period must always be reduced, and more productive services of previous periods have to be consumed than those of the present period. From this point of view savings are the result of the choice between a bare pittance in the present and adequate, if deferred, comforts in the future.

Saving means a real saving of the productive forces ; it thus influences the direction of production by forcing them into a different application. A change in the structure of production is brought about if savings of previous periods

¹ It might be more advisable to speak of present and future goods, and even more appropriate according to Böhm-Bawerk's terminology. The terms here used fit better into the general scheme of this thesis, especially as they are employed by v. Mises, Hayek, and others (Strigl). Böhm-Bawerk's notion of capital differs from Jevons's notion of capital as Böhm-Bawerk included into his notion not only consumers' goods, but also all intermediate products which are a potential source of consumers' goods.

² This principle of Böhm-Bawerk has become so important for modern economic theory. Correctly interpreted it means that the process of saving and the process of investment shall go hand in hand. The discrepancy between saving and investment has been nowadays considered as the cause of depression, and the following process of adjustment.

are finally transformed into intermediate products (or goods of higher order) so that a roundabout method promising greater physical output can be applied. Hence saving serves the accumulation of a fund of subsistence which will enable the use of the productive services of land and labour (or productive forces as Böhm-Bawerk calls them) for future periods.¹ Böhm-Bawerk then explains how the accumulated fund of subsistence serves to bring about changes in the structure of production and so facilitates further development.

A fund of subsistence² enables the application of greater roundaboutness. The length of the roundabout way should be in proportion to the available fund of subsistence. Everybody who disposes of a certain fund of subsistence can start lengthening methods. The owner of present goods exchanges them in the hope of obtaining greater output in the future. The recompense for selling present goods is interest. Every market (the subsistence market, the labour-market, and the market for agricultural produce) is characterized by exchanges of present goods for future greater productivity. The owner of present goods buys the future productivity of human labour and land to introduce more productive capitalistic methods of production. The person who disposes of present goods obtains a higher price for them because of the possibility of future greater productivity. In other words the power of disposing of present goods and present productive forces is indispensable for new investment. The presuppositions for the payment of interest are therefore: (a) the lack of means of the

¹ Compare p. 141, *Positive Theorie*, etc., and for the following, pp. 331, 391-409, 449, 463, 464, *Der Kapitalgewinn der Unternehmer*, "Die Zinshöhe im Marktverkehr," "Der Kapitalmarkt in voller Entfaltung" (iv Buch, ii and iii Abschnitt). Compare also p. 92 of the second part of this thesis.

² The fund of subsistence as conceived in the context is the sum of all private funds of subsistence (social capital), but Böhm-Bawerk sometimes only treats the fund of subsistence at a person's disposal (private capital).

labourer which makes the application of lengthening method impossible for him, but also (b) that the productive effect, due to the application of capital is greater than without the application of capital. Böhm-Bawerk nevertheless assures us that interest will always be positive as the economic character of certain goods will always make the application of greater roundaboutness profitable. Concluding we might say that according to Böhm-Bawerk the existing fund of subsistence determines the magnitude of new investment as it determines the height of the rate of interest. The height of the rate of interest varies with the existing fund of subsistence and the yield of the roundabout method. If the yield can be increased and if the number of labourers is very great, the fund of subsistence, nevertheless, very small, the rate of interest is high and vice versa. Because of the scarcity of present capital-goods and of intermediate products we pay a price for their acquisition—that is interest.

§ 3

Böhm-Bawerk's theory of the function and formation of the fund of subsistence can be considered as a theory of credit and the trade-cycle. His theory reveals the function of saving for capitalistic production and therefore means further progress with regard to Menger's theory of credit.¹ Böhm-Bawerk emphasizes the fact that capital-disposal is necessary for the introduction of greater roundaboutness, but he also examines the influence of credit on the productive activity of a country. In a capitalistic production,

¹ C. Menger has emphasized the fact that producers' goods or the disposal of them can be loaned, and that credit is the basis of any productive activity of a country. The bearish attitude towards granting loans can create serious disturbances and the stagnation of further progress. Menger, who expresses this idea only in a footnote, gives no sufficient explanation of what is the object of the loan, the means of production or the disposal of them (often expressed as use of capital). Furthermore, he does not clearly show how the banking system by its credit-supply influences the productive activity of a country.

Böhm-Bawerk holds, the entire production is regulated by the consumer. If a population could consume all its income, such great demand for consumers' goods would induce the entrepreneur to transform all productive forces at their disposal into consumers' goods. If no savings have been made, therefore, prices of consumers' goods will rise. If savings have been made we can employ present productive forces for future purposes. The way this is done is the following. Savings of previous periods are put at the disposal of entrepreneurs and become a reason for a greater demand for producers' goods and intermediate products. The disposal of previous savings,¹ the fund of subsistence reinforces the purchasing power of the producer who, therefore, can introduce ² greater roundaboutness. As Schumpeter explains "it is not the running of a production of a given degree which matters but the act of introducing greater roundaboutness".³ But neither Menger nor Böhm-Bawerk always have clearly expressed that the capital-disposal is the object of a loan. Böhm-Bawerk, on the one side, considers credit as an exchange ⁴ of present for future goods although he often has spoken of the necessity of capital-disposal for the application of greater roundaboutness. Only the inclusion of goods seems to him a sufficient explanation of the phenomenon of increasing productivity, the result of every credit-expansion. With the inclusion of concrete

¹ This line of Böhm-Bawerk's theory translated into modern theory means that money-savings are credited to the entrepreneurs who can buy producers' goods with them and start production. If, nevertheless, investment does not go hand in hand with saving, economic development will be checked after a certain time.

² Compare p. 131, *Positive Theorie*, and pp. 149, 135, and ii Buch, iii Abschnitt, *Die Funktion des Kapitals*; further, "Der Kapitalmarkt in voller Entfaltung, Buch iv, iii Abschnitt; see also Martin Hill on this subject in *E.J.*, 1933, and Schumpeter in a footnote in *E.J.*, 1928, "The Instability of Capitalism."

³ Compare *Rechte und Verhältnisse* and Wicksell, *Über Wert, Kapital und Rente*, 1893, p. 87.

⁴ Compare pp. 88 ff., 103 ff., 105, 106, and 109 ff. of the second part of this thesis.

goods Böhm-Bawerk is far away from the correct solution of the problem as credit consists in the exchange of present ¹ for future purchasing power. His definition of credit does not even explain the crux of the matter—the payment of interest, because Böhm-Bawerk neglects to examine whether this increase in physical productivity will be followed by an increase in value-productivity. *The problem did not consist in proving a superiority of value of present goods but in proving why we can obtain an increase in exchangeable value as soon as the finished product is available for sale.* He therefore always speaks of capital-disposal when he intends to explain the existence of interest. For the possession of present capital-goods which are necessary for the introduction of new methods of production we pay a price—that is interest.

The above shows that although the Austrian School understood the events concerning the world of goods, they neglected the monetary aspect of the events of the capitalistic world. The fault committed by Menger and Böhm-Bawerk is therefore of having only examined changes in the structure of production without examining the cause of such changes which is to be found in monetary changes. Their neglect of the monetary side of the problem has induced them equally to neglect the fluctuations in the value of different categories of goods which temporarily occur and which have to be considered from a theory of credit. These fluctuations are significant for the period of disturbances which follows any credit-expansion, and which Böhm-Bawerk himself has so suitably characterized speaking of the temporarily occurring disproportion between physical and value-productivity. The explanation of these phenomena of the capitalistic world must deal with both,

¹ A theory of credit should explain why present purchasing power is needed. Böhm-Bawerk holds accordingly that the fund of subsistence at a person's disposal enables the purchase of the productive services of land and labour. Böhm-Bawerk's definition of credit is therefore inconsistent with his own theory.

with goods which have different functions in the trade cycle and, therefore, belong to different categories, and with their monetary expression which connects these different categories.

The error of neglecting the monetary side of the problem concerned accounts also for the existence of so many notions of capital. Numerous economic phenomena which can only be defined with great difficulty have produced a corresponding number of notions of capital which are either too broad or too narrow. It is, therefore, necessary to define what capital is and to describe its function in a capitalistic system. This is best done by abstaining from the use of the word capital, that is to say from characterizing with the word "capital" phenomena of a capitalistic system which only signify functions of capital without being capital itself. One can easily substitute other and less confusing terms as Schumpeter has pointed out in his article in the *Handw. d. Stsw.*, but it is necessary to explain wherein their importance¹ for capitalistic production lies. The Austrian authors, as we have pointed out, only dealt with changes in the world of goods and neglected the monetary side of the problem. Schumpeter tried a solution choosing the monetary side as a starting point. His investigation was very much facilitated by the introduction of the popular notion of capital into science for which all credit must be given to C. Menger.

¹ Böhm-Bawerk himself seems to be aware of these difficulties when he mentions in the introduction to his *Positive Theorie*, p. 2 (iv Auflage) that he will treat separately the theory of capital as source of future productivity and the theory of interest.

CHAPTER II

THE MONETARY CONCEPT OF CAPITAL

FOR a long time the neglect of monetary phenomena has hindered the further development of the line of thought which Menger and Böhm-Bawerk had so fruitfully initiated.¹ A notion of capital was lacking which suitably combined both functions of capital and credit to serve production and acquisition. The inclusion of goods in a notion of capital could not solve this problem. The reason for this was that we find elements of the function of capital in both notions, the fund of subsistence and the stock of complementary goods of higher order. The inclusion of goods means therefore deciding between one kind of goods or the other. It is necessary to find a concept of capital embracing both categories of goods and explaining wherein lies their function in a capitalistic system. Menger has contributed to the further development of economic theory by introducing the popular notion of capital. The acceptance of the popular definition of the word "capital" brings us nearer to the solution of the problems discussed above.

¹ Menger and Böhm-Bawerk, as we have seen in the preceding chapter, had emphasized *the fact that the capital-disposal is indispensable for the carrying through of the productive process*. Menger has even laid great stress upon the fact that the possession of all complementary goods of higher order is necessary for the obtainment of greatest physical output. If somebody starts an enterprise, he must accordingly provide himself with the necessary stock of complementary producers' goods and *the function of capital is to enable the purchase of this stock of goods*. These authors, therefore, had shown that capital has the function to ensure future productivity by serving the acquisition of goods of higher order which are the holders of future productivity.

§ 1

The Popular Notion of Capital

The notion of capital, Menger¹ had pointed out,² should be consistent with the popular conception of capital. The scope of economic science is the clarification of this notion which already exists in practical life. Popular speech considers as capital objects which yield an income in money or measured in terms of money. Capital, in other words, is the stock of an economy which produces for the market. It consists in money or is measured in terms of money. The mere fact Menger holds that money serves acquisitive purposes can account for an increase in value-productivity. The inclusion of money in a notion of capital would accordingly be justified, but Menger does not explain why interest is paid only because money serves the purchase of other goods. The fact that money serves the acquisition of other goods has also induced Böhm-Bawerk to include money together with other acquisitive goods into his notion of private capital. Böhm-Bawerk, however, did not see that the purchasing power of money is the reason for the payment of interest; he considers only the increase in physical productivity as relevant for the explanation of interest. He holds that we only measure this increase in physical productivity in terms of money, but money itself cannot account for it. Menger seemed to realize the necessity of holding apart the two functions of capital, that

* Menger was aware of the difficulties which arise when goods are included in a notion of capital. His introduction of the popular notion was likely to check the confusion which prevailed such a long time in this field, *provided that this notion were correctly interpreted*. Menger opportunely had pointed out that it is a scientific error to group a number of economic phenomena under a single head which has an accepted and different meaning in popular speech. *The correct use of the term "capital" should check the use of terms signifying entirely different economic concepts and categories.*

² Compare "Zur Theorie des Kapitals" in *Den Jahrbüchern für National-Ök.*, N.F., 17 Bd., p. 1 ff., 5 ff., 40, 41 ff., also Böhm-Bawerk, *Positive Theorie*, pp. 35 ff., 19, 40, 41, 68-71 (including footnotes).

of serving the increase in physical output and that of serving the acquisition of the necessary means of production.

The means of production, he holds, cannot be capital, but the amounts of money embodied in them may be considered as capital. Land in so far as it represents purchasing power may be regarded as capital.¹ Capital, therefore, ceases to be capital if it is used for payment.² Menger gave accordingly the following definition of capital. "Der Realbegriff des Kapitals ist das Vermögen der Erwerbswirtschaft, welcher technischer Natur derselbe auch sein mag insoferne sein Wert in Geld Gegenstand unseres ökonomischen Kalküls ist, d.i. wenn dasselbe sich uns rechnungsmässig als eine werbende Geldsumme darstellt." (Menger, "Zur Theorie des Kapitals," in den *Jahrbüchern für Nat. u. St.*, N.F., 17 Bd., p. 40.)

It may be convenient, therefore, to compare Menger's new notion of capital with his older theory. The fault committed by Menger becomes soon apparent. Menger neglects a point he has previously emphasized—the influence of capital (credit) on the productive activity of a country. Böhm-Bawerk,³ therefore, correctly objects to this theory on the grounds that it simply concerns acquisitive capital and that it does not show the function of capital in a capitalistic production. But does not he himself merely

¹ The fault of Menger is that he does not clearly express what may be considered as capital. Menger himself admits that misunderstandings of the popular usage of capital might arise as the same objects which are sometimes measured in terms of money and have the function of capital are by some people only considered as a stock promising future productivity. This inconsistency can easily be explained. The owners of the means of production of longer durability (especially if they are inherited) forget very often that purchasing sums of money has been needed some time before to buy them. This capital embodied in land or in means of production of greater durability becomes liquid again as soon as their owner is compelled to invest it in a more profitable way.

² Hildebrand refers to this idea similarly in his *Theorie des Geldes*, 1883. Capital is the power of acquisition depending on the amount of value at our disposal. If this is an entirely modern idea, I have only to add that one could put, instead of power of acquisition, general purchasing power. (Compare Böhm-Bawerk, "Kapital und Kapitalzins.")

³ Compare Böhm-Bawerk, ii, 1, p. 73 ff.)

speaking of acquisitive capital when he explains interest? Interest, according to Böhm-Bawerk, is paid for the possession of complementary goods of higher order (capital-disposal). The owner of the fund of subsistence earns interest by buying with it the productive services of land and labour or by putting it at the disposal of the entrepreneur *who introduces greater roundaboutness*. Böhm-Bawerk, therefore, as Schumpeter has shown, approaches the modern and popular notion very closely in considering the fund of subsistence as capital. The importance of the popular notion of capital lies in its greater aptitude for further investigation because it suitably explains the functions of different categories of goods. If capital be explained in terms of goods there is a danger of excluding some important categories of goods and so excluding some of the important characteristics of capital. On the other hand the employment of the monetary concept of capital includes all the categories of goods and therefore all the characteristics of capital. But Menger's new concept of capital needs further completion. It needs the support of a sound theory of credit, explaining *why only these objects are considered as capital which are used for the purchase of others and how they influence the productive activity of a country*.

Modern theory has developed Menger's notion. If a person says that his enterprise needs capital, he means by capital the sums of money necessary to enable improvement or new investment. Means of production are only the object of investment bought in the expectation of future income. As they are usually possessed by others, capital or purchasing power is needed to buy them.¹ The popular notion, therefore, correctly interpreted yields a better under-

¹ Schumpeter, *Theorie der Wirtschaftlichen Entwicklung*, pp. 166, 167, and Schumpeter's article "Kapital" in *Handw. der Staats Wissenschaften*; Schumpeter has similar views of the function of capital. Credit must be given to Schumpeter for the clarification of the matter, and for his investigation of the real function of capital and credit.

standing of the true function of money ; the advantage of the older theories of capital and credit, as Mises points out, being that they yielded a better understanding of the " *Kapitalfunktion des Geldes* ".¹ Money cannot yield physical output. *Pecunia pecuniam parere non potest*, but the function of money consists in the acquisition of other goods, which can yield future productivity. Mises sees an important parallel to the function of money in those consumers' goods which are not consumed by their owner, but which are used for the purchase of other goods and productive services. Money which does not serve productive purposes can yield no output. " *Bestandteil des Privat-kapitals ist das Geld nur, weil und insoferne es für das wirtschaftende Subject Mittel zur Erlangung von anderen Kapital-gütern ist.*"² Schumpeter has continued this line of thought by giving Menger's new theory of capital its logical foundation.

§ 2

Wieser's theory of the influence of economic change on the purchasing power of money, a basis of Schumpeter's theory of economic development and of Mises's theory of the trade-cycle

In the preceding section we have discussed the important contribution of Menger to the further development of economic theory and for the understanding of the actual capitalistic system.

v. Wieser's³ examination of the rise⁴ in the price-level

¹ Menger's merit is of having discovered the " *Kapitalfunktion des Geldes* ".

² Compare v. Mises, *Theorie des Geldes und der Umlaufsmittel*, pp. 55-67, chap. v, 2nd ed., 1924.

³ Compare Mises, p. 170 1st edition, p. 136 2nd edition, *Theorie des Geldes und der Umlaufsmittel*. Compare also Wieser " *der Geldwert und seine geschichtl. Veränderungen* ", " *Theorie der gesellschaftl. Wirtschaft.*" (*Grundriss der Sozialökonomik*), 1 Abt., Tübingen, 1924, p. 323 ff., v. Mises, p. 140 ff., 2nd edition, and pp. 174-184.

⁴ v. Wieser speaks of the *daily increasing expensiveness of life*. This term, though clumsy, expresses rather well a necessary consequence of a credit-expansion, i.e. the fact that any credit-expansion brings about a change in

means further development of monetary theory, because of its attempt to explain dynamic changes. In the preceding chapter we have drawn attention to the failure of Böhm-Bawerk and Menger to explain fluctuations in value which temporarily occur and which Böhm-Bawerk has so suitably characterized as a discrepancy between physical and value-productivity. The task of economic theory is to trace the line of causation of this phenomenon which being an element of economic change cannot be explained by ordinary equilibrium theory.¹ Wieser's merit consists in having called attention to a phenomenon of economic development which is so important for the explanation of the discrepancy between physical and value-productivity.² Even if he has only described a phenomenon particular to a period of credit-expansion, he has in his theory expressed some ideas which can be further developed, and which indeed have been further advanced by other economists (Schumpeter, v. Mises).

v. Wieser attempts to explain the rise in the price-level as a consequence of economic development. *The development of the money-economy is always followed by a depreciation of the purchasing power of money.* If development is finished the inner-objective value of money will rise again. A decrease ³

real incomes. Because of the rise in prices some people are forced into involuntary saving, finding themselves unable to pay the new prices. Wieser has not come to this rather obvious conclusion. He only pointed out that the solution of the above problem consisted in examining the influence of changes in monetary value on changes in real incomes.

¹ Compare Wicksell's similar argument in *Über Wert, Kapital und Rente*, 1893, against Böhm-Bawerk's theory, pp. 86, 87.

² v. Wieser has failed to see the connection between rise in money-costs and the fall in prices which occurs when the increased physical output is brought to the market. A cause of crisis is that the prices of the finished products fall faster than the prices of its means of production which for a certain time even have a tendency to rise (due to the greater competition for original factors of production and intermediate products).

³ v. Wieser seems to be aware of the two phases of economic development, the period of boom, characterized by a rise in the price-level, and the period of adjustment, characterized by a fall in the price-level. But v. Wieser nevertheless does not explain this phenomenon, that is to say why money-costs rise first and why this excessive rise in money-costs affords a

in the purchasing power of money according to Wieser (a) may be the result of an increase in the quantity of money, (b) of a decrease in the total supply of commodities, (c) of economic development.¹ The third problem Wieser attempts to explain and although he fails we are indebted to him for having attracted our attention to some, at his time, unknown phenomena. At the beginning of a money-economy every individual produces rather for his own consumption and acquires only few articles by the exchange of his own products. The costs of the exchangeable products are not as high as in a more developed money-economy. They consist in the costs of the raw material, the amortization of the specialized tools applied, etc. Personal labour at this stage rarely enters into the valuation of costs. The development of the money-economy increases the costs of production as more costs are now measured in terms of money.

The reason for the increase in money costs is that the progressive division of labour increases the number of the products to be bought. As costs are measured according to the actual value of money the general price-level increases proportionately. This rise in the money-costs is *a necessary symptom of the development of the money-economy*. The decrease in the purchasing power² of money therefore is explained

period of adjustment. He only states that when development is over, the purchasing power of money will have increased again. The increase in the purchasing power of money is due to a decrease in the circuit-velocity of money.

¹ We assume in contrast to v. Mises that v. Wieser does not mean a change from a direct exchange of goods to an indirect exchange of goods (through the medium of money), but a change from a less developed money-economy into a more developed one. v. Mises's assumption that a barter-economy must necessarily mean an economy without exchange is not appropriate. At any rate v. Wieser's theory justifies our interpretation. It would be, however, somewhat curious to explain a change in the purchasing power of money as a result of a transition of a barter-economy into a money-economy, because in a barter-economy exchanges are not effected by the medium of money.

² The Austrian School, especially v. Wieser and v. Mises, speak of changes in the inner objective exchangeable value of money. The term "purchasing power" seems more consistent with the development of modern monetary theory. v. Mises uses occasionally this term.

by v. Wieser as a consequence of the development of the money-economy. The old prices rise in proportion to the values of the new elements of costs which become the subject of our monetary consideration. The expansion of the money-economy causes more and more enterprises to produce for markets and to increase monetary output. Accordingly more and more elements of costs have to be included into our monetary calculation. On the other hand it becomes necessary *to bid for the productive forces as competition increases*. The demand for money increases and those responsible for the money supply have to adjust it to the actual conditions of the market. The rise in the price level so brings about a diminution of the purchasing power of money although, due to the increase in productivity, there is a natural tendency for a decline in prices and a rise in the purchasing power of money.

Wieser therefore correctly maintains that the object of our investigation should be (a) the influence of changes in money incomes on changes in real incomes and (b) whether changes in real incomes¹ can be possible without corresponding changes in money incomes. His theory has been interpreted differently by Austrian economists, and although it does not solve the problem it suggests the correct way of tackling it and has so influenced all following theories.

v. Mises has criticized v. Wieser's theory on grounds of the Austrian theory of subjective exchangeable value.² He

¹ Schumpeter has interpreted this idea of v. Wieser in that the entrepreneur who in order to obtain the necessary means of production is endowed with purchasing power forces other people to involuntary saving. Competition will cause a further diminution of purchasing power because of the necessary rise in cost. v. Wieser would have been nearer to the truth if he would have examined more carefully why entrepreneurs must compete for the factors of production, and if he would not have treated his phenomenon as a matter of fact.

² v. Mises further advances v. Wieser's theory of changes in monetary values of which v. Wieser himself has made little use for the explanation of dynamic changes.

maintains that any increase in exchangeable value of one commodity must be balanced by a decrease in value of another commodity. It is unbelievable that one can alter the conditions of exchange so that all prices of commodities begin to rise. "Der Werterhöhung auf der einen Seite muss eine Werterniedrigung auf der anderen Seite gegenüberstehen. Ist es doch undenkbar Austauschverhältnisse der Weise zu verändern, dass beide Güter teurer werden." (p. 142.)

The cause of the change in the purchasing power of money cannot be explained only by a transition from barter-economy into a money-economy, and further completion is indispensable.¹ It is necessary to seek for the cause of the change of the purchasing power of money or at least to investigate whether a transition from a less developed money-economy to a more developed money-economy brings about a change in the purchasing power of money.

v. Mises² is aware of the continuous rise in prices, but he thinks that the solution lies in an investigation of the effects of an increase in additional money on the subjective estimates of the consumer and relative prices of commodities. If prices rise due to an increase in the money-costs, there is a possibility that the buyer may buy the commodity, in spite of the rise in prices. In a system of indirect exchange (where exchange is affected through a medium of exchange) it is conceivable that the buyer will allow for the rise in prices although it does not correspond to his subjective estimates

¹ At the actual stage of economic development it is even correct to assume that the transition from a barter-economy to a money-economy has already taken place. Such transitions which still take place cannot account for the phenomenon, discussed above. We have, therefore, interpreted v. Wieser's theory in the sense that v. Wieser tries to explain the development of a money-economy.

² Compare pp. 143, 144, 145, 146, 147, 2nd edition. v. Mises's criticism can only be understood in connection with his other theory. The objection that an expansion in one trade means a contraction in some other trade because of the occurrence of losses must be completed in the sense that the rise in the general price-level is due to an increase in additional money.

because he may be able in his turn to increase his monetary output. Anybody who tries to increase his monetary output does not realize that this tendency brings about a decline in the purchasing power of money as for a certain time he may be able to make temporary gains. The reason for such temporary gains is that prices adjust themselves differently to changes on the demand side. Those persons who benefit by the increase in additional money will feel more inclined to spend more on investment than before. This results in a new distribution, as a change in money-incomes will be followed by a change in real incomes.

v. Wieser's explanation of the rise in the general price-level is incomplete as it only concerns an increase in money-transactions. It is true that greater roundaboutness and division of labour require a greater amount of money for being carried through ; but v. Wieser does not explain the real causes of a decrease in the purchasing power of money. But has v. Mises himself given an explanation of the rise in the general price-level which is such an important phenomenon of economic change ?

v. Mises's theory as he himself admits is very strongly influenced by v. Wieser's criticism ¹ of the old quantity-theory. v. Wieser had held that the old quantity-theory could not explain *the determination of monetary value*. It could only indicate *the possible direction of the movements of monetary value*. The value of the old quantity-theories consists in having drawn our attention to the influence of changes in the money-supply on monetary value.

Although various statements of v. Wieser confine explanations of monetary phenomena to an explanation of increase in money-transactions (especially his explanation of the rise in the price-level), we must be aware that *his criticism of the old quantity-theory has opened a new field for further investigation*.

¹ Compare v. Wieser (Sammlung Hayek), p. 212 ff., and v. Mises, pp. 96, 97, 111 ff.

v. Wieser has carefully examined the laws which determine the subjective value of money. Aware of the fact that the money-spending power of the consumer determines the formation of the single price he tries to find the reasons which induce people to disburse their money. v. Wieser found that disbursement depended (a) on the marginal utility of the money fund at the disposal of the individual, (b) on the special price-level with which the individual is concerned. In other words the prices of commodities with which an individual has to deal must determine his economic actions. Every individual adjusts his economic actions to the actual price-level; he measures his monetary output with regard to the old prices and his demand for money increases accordingly. The problem is how are changes in real incomes brought about and are they necessarily a result of changes in money-incomes? The old quantity-theory treated this problem too much from the supply-side, neglecting the demand-side. It could not explain how changes in the purchasing-power of money takes place and only could indicate the possible direction of such changes.

v. Mises has deduced his own theory from these statements. He has emphasized the fact that the results of changes in the additional supply of money depend on the actions of the individual and that these actions in the first place influence the special price-level and prices which such an individual is concerned with.¹

The demand for money, he holds, does not depend on the amount of payments effected; it depends on the subjective estimates of the consumer which is responsible for these payments, that is to say it depends upon whether he will spend his money on *consumption* or on *production*. The value of money does not change, but the subjective estimates of the

¹ Compare v. Wieser (Sammlung Hayek), pp. 194, 195, 204-212, etc. Compare also v. Mises, *Theorie des Geldes und der Umlaufsmittel*, pp. 105, 114, 115 ff., 131-3, 139 ff., 190, 191, 192 ff., 302, 361, etc.

consumer can alter the value of goods,¹ and can bring about an alteration of the conditions of exchange,² and the relation between different commodities. v. Mises mainly describes the consequences of an increase in additional money, but he gives a less thorough account of why additional money is issued. Credit must be given to v. Wieser for having dealt with these causes when he mentions the *competition of the entrepreneurs for the factors of production*. His fault was of having underestimated this phenomenon.³ Also v. Wieser's merit is of having considered the decrease in the purchasing power of money as an element of economic development. He often claims that the money-supply should be adjusted to the demand of the individual who is responsible for economic changes. For these reasons the purchasing power of money does not remain constant. It only could *be constant in an economic system without change* where the prices of commodities remain unchanged and where, therefore, no change in the purchasing power of money would occur, whereas in an economic system without change there would be always the same conditions and circumstances for the supply and demand of money. These conditions are different in an economic system which is continually changing. In such a system every movement of the market influences the purchasing power of money. The role which money plays is dictated by the law of economic development. In his examination of monetary changes v. Wieser has discovered their connection with another active law—the law of con-

¹ Compare Böhm-Bawerk and C. Menger, who have pointed out that the subjective estimates of the consumer influence essentially the structure of production. Compare also chapter v of v. Mises's *Die Theorie des Geldes und der Umlaufsmittel*, 2nd edition.

² v. Mises expresses different views in his 1st edition, and in his 2nd edition, p. 147, he adds to his former statements they we must consider a stationary and a dynamic state of economy. Dynamic changes can cause changes in the conditions of exchange and in the relation between different commodities. (Compare also the chapter on v. Mises's and v. Hayek's theory of the trade-cycles.)

³ Compare v. Wieser, *Der Geldwert und seine geschichtl. Veränderungen*, p. 189 (Sammlung Hayek).

tinuous development ; but he has not described why such changes occur and wherein the continuity of their occurrence consists.

Schumpeter's theory (analysing the role innovations play in economic development) seems to me the right answer to these questions and a sort of authentic interpretation of v. Wieser's theory because Schumpeter has analysed economic development and has based his arguments on the observations of the Austrian School and v. Wieser in particular.¹

§ 3

Schumpeter's Notion of Capital ²

Schumpeter's conception of capital is an important element of his explanation of economic development.³ He

¹ A short account of this connection will give a better understanding of the following chapters of this thesis : Schumpeter has adopted v. Wieser's picture of the development from a barter-economy into a money-economy as this hypothetical picture of economic change is of great advantage for the analysis of economic development. It suitably contrasts the system without development with a system where continuous development takes place. In a barter-economy or in a system without change the means of production are in the possession of those responsible for production. In a system where continuous development takes place the entrepreneurs who introduce further progress have to buy the necessary means of production from other economies. Therefore they have to be endowed with greater purchasing power, which accounts for a rise in prices. The tendency to increase one's monetary output, on the other hand, will make the rise in the price-level more and more general, and will finally result in a diminution of this output. Schumpeter assumes an identity of value between the means of production and their products like all other authors of the Austrian School, but he uses this hypothesis merely for the sake of clarifying his theory of dynamic changes. As this identity does not exist in practical life, that is to say as the money-prices of the means of production and their product differ, it is necessary to examine the cause of this disturbance. If the identity between the means of production and their products really existed, the owners of the means of production would have all the benefit of the output of production. This identity only exists in Schumpeter's hypothetical economy, and it is very useful for finding the *cause of the aforesaid disturbances*. Schumpeter holds that the pioneers of progress do not possess the necessary means of production and, as their disposal is indispensable for production, credit is the instrument to provide them and interest the price herefore.

² Compare Schumpeter's *Theorie der wirtschaftl. Entw.*, ch. i, ii, iii, pp. 4, 5, 6, 11, 14, 15, 18, 21, 26, 27, 37, 38, 39, 41, 51, 64 ff., 68, 69, 99, 100 ff., 176 ff.

³ Schumpeter's conception of economic development will be discussed in the chapter dealing with his doctrine of productive credit.*

first explains why consumers' or producers' goods should not be included in the notion of capital, because he considers capital as a factor which serves *acquisition* and *production*. Through division of labour one produces for the market ; in our actual economic system therefore we must consider all goods as commodities which are sold for money at the market.¹ The income they yield is the money-profit which the producer of such commodities obtains by the sale of his commodities.² Obviously their importance for the producer does not consist in their particular quality of goods, but in the money-profit which they yield. Hence they cannot have the special function of capital in an economic system.

The function of capital in a money-economy is different from the function of capital in a barter-economy.³ For a better understanding of this difference we have, according to Schumpeter, to be aware of the two antagonistic principles which dominate our capitalistic system : the one is the satisfaction of our wants, the other the attainment of money-profits. On the one side every output is considered as the result of increase of goods. On the other side we think of a money-income in relation to a person who produces for the market and whose aim is the attainment of monetary output.⁴

¹ If we assume a production of two steps, we find that some produce consumers' goods, some producers' goods according to the demand at the market. In other words one produces for acquisitive purposes, and the aim is the profitable exchange of the product. These assumptions are also appropriate for a production of more steps. (Compare Menger and Böhm-Bawerk upon this subject.)

² This theory was obviously partly anticipated by Menger who considers as capital objects which yield monetary output. (Compare the section dealing with the popular notion of capital.)

³ In a barter-economy, a stock of consumers' and producers' goods is necessary for the application of an indirect (roundabout) method of production.

⁴ Compare the similar views of v. Komorzynski, v. Philipovich, p. 40, and especially Engländer, pp. 21 ff., 47 ff. (*Theorie der Volkswirtschaftslehre*), v. Philipovich considers, for example, incomes the result of production. Every production which did not fail yields an output. Only the net-return of the output exceeding costs means an increase or advance of production.

In a barter-economy therefore the aim of every production is the obtainment of greatest physical output, in a money-economy the attainment of money-profits. These two antagonistic principles are reconciled as higher profits lead to greater competition, which finally causes a diminution of these profits, which are distributed among the owners of the productive services of land and labour. But we are here anticipating future investigation. The aim of these observations is to show that Schumpeter, like some other Austrian authors,¹ distinguished between a real income expressed in terms of goods and a nominal income expressed in terms of money. This distinction is the basis of Schumpeter's theory of capital as it explains the importance of different categories of goods for the economic system. The aim of the individual is the satisfaction of present wants which is obtained by an increase in physical output; the aim of any production is the attainment of monetary output. Nevertheless the increase in physical output and the increase in exchangeable value (physical and value-productivity) may not always go together. This discrepancy, which is a purely monetary phenomenon, can only be solved by monetary theory. As every credit-supply stimulates greater competition, a theory of capital must examine the further results of the credit supply. The further results of too great a competition are a rise in the prices of producers' goods. Money-cost though decreasing as the production of producers' goods increases, fall slower than the prices of the product. *Physical and value-productivity are not identical.* The key to this problem lies in an examination of the special function of capital in the capitalistic system.

The aim of production must be either an improvement of the produced products, or an increase in physical output. This theory in its monetary aspect, as v. Philipovich points out, leads to the right solution as any output exceeding costs can only be a money-income.

¹ v. Wieser, v. Mises, Engländer, etc.

Schumpeter's theory of the function of capital is the following. Considering a person's income we not only know what quantity of goods a person can consume in a certain time, but we also know the distribution of all acquisitive goods whether producers' goods or consumers' goods or rights. The function of capital is to bring about a change in real incomes and to create a new distribution of goods. This new distribution is necessary to provide the entrepreneur with the necessary means of production which as we shall see later he needs for carrying out his innovations. Economic development therefore means making a different use of already existing resources, and original factors of production. The carrying through of new methods and ideas (innovations) consequently takes place by the withdrawal and reapplication of the services of land and labour.¹

Since in a capitalistic system purchases are effected by money, an enterprise needs money or purchasing power for the fulfilment of its purposes. Money in any form is the representative of purchasing power, and Schumpeter includes accordingly currencies, deposits, letters of credit, bills of exchange, etc., in his notion of capital. The new notion of capital contends that the events of the money and credit markets are essential for the explanation of certain facts which can not be explained by a theory including only goods in a notion of capital. The new notion differs from other notions which have applied the element of money, in that money itself or purchasing power and not the money value of concrete goods is considered as the important factor. Schumpeter's notion, therefore, differs from the popular notion of capital in the following way :

¹ We must be aware that this credit-policy can lead to serious disturbances, and can make a process of adjustment indispensable. The reason for such disturbances is the resistance of the consumer against the curtailment of his income. He, therefore, tends to re-establish the old equilibrium. We will discuss later what conditions have to be fulfilled in order that innovations are successfully introduced into the economic system. Disturbances, nevertheless, will be unavoidable.

on the one hand it includes not only money but also currencies and, on the other, it is a notion which allows for economic development. Unless sums of money provide the entrepreneur with producers' goods they cannot be classed as capital under this theory. According to Schumpeter capital is nothing more than the lever which provides the entrepreneur with the necessary concrete goods. It represents the means of disposing of goods for new purposes or the means of leading production in a new direction. The definition of capital, therefore, is as follows : Capital is the sum of money ready at any time to provide purchasing power to the entrepreneur. *Capital enables the entrepreneur to outbid the others* ; it increases the income of the owners of the productive forces (land and labour) nominally, but diminishes their real income, a fact called "forced saving" by v. Mises. How competition on the one side increases again the real income of the consumer will be shown in the next chapter ; it only remains to indicate that the increasing productivity which is due to a successful innovation, contributes to general wealth.¹

The new notion in contrast to others can give an explanation of *why physical productivity is not always followed by value-productivity*.² The identity of physical and value-productivity was one of the postulates that Böhm-Bawerk demanded for a theory of interest.³

The old theories of productivity had tried to find a solution for the connection between capital and the con-

¹ We shall deal in the next chapters with Schumpeter's theory of credit and profits more thoroughly, and discuss the aforesaid problems and their relation to economic development.

² The *explanation* is that the new credit-supply stimulates producers to produce more than would be profitable. The possibility of obtaining greater monetary output increases competition and simultaneously the demand for producers' goods. This causes the prices of the products to fall faster than money-costs which for a certain time even tend to rise. Money-costs will fall again as an increased production of producers' goods increases their amount, and so will lower their prices.

³ Compare Böhm-Bawerk *Kapital und Kapitalzins*, i, pp. 128, 129, 130, 2nd edition.

tinuous supply of goods and to discover whether this increasing supply conserves its value. Their assumption that the increased physical output is always accompanied by an increase in value was not consistent with the real facts and caused the failure of their theories. Accordingly, Böhm-Bawerk's main objection was that these theories explained only the increase in physical output without questioning whether this increase in physical output was followed by an increase in value.¹ Böhm-Bawerk himself was unable to solve the problem,² the solution of which consisted in an examination of the monetary problems of the trade-cycle. If Böhm-Bawerk vehemently contradicts Schumpeter's theory of capital, he only intends to emphasize the fact that the so-called productivity³ of capital has to be included in an explanation of interest. v. Wieser described the task of modern theory in the following way:—

(1) As the problem of proving and explaining physical productivity and

(2) As the problem of determining why the value of the gross-return must be higher than the value of the consumed means of production (Warum ist der Wert des Rohertrages grösser als der Wert der Kapital verbrauches? Compare Böhm-Bawerk *Kapital und Kapitalzins*, I, pp. 668, 670).

The solution of the problem as we have already mentioned lies in an examination of the monetary aspect of the problem. The neglect of the monetary side of the problem was the reason for a failure of all preceding theories of capital and interest. Schumpeter therefore emphasizes the fact that

¹ Mere physical productiveness cannot explain monetary phenomena like interest and profits.

² Compare the second part of this thesis. Böhm-Bawerk with the inclusion of the roundaboutness of production fell back on the old error of the theories of productiveness. The explanation of interest by a mere difference in value between present and future goods was bound to fail, because of its inconsistency with real facts. This idea was only useful if the monetary contents of this theory were considered as Schumpeter did.

³ Böhm-Bawerk means that the investment side of the problem has to be considered more carefully.

profits and interest are monetary phenomena and that only by an examination of the monetary side of the problem can one find the cause of the temporarily existing discrepancy between physical productivity and value-productivity.¹

In monetary changes or changes in the monetary output lies the explanation of the aforesaid disturbances of the trade-cycle. Only monetary changes yield sufficient explanation why physical productivity is not always identical with value-productivity. One principle dominates the capitalistic system, the desire of increasing one's stock of money, and the correlation between interest and this principle is the explanation of the payment of interest,² and it also explains why physical productivity is not always followed by value-productivity owing to the special role money plays in capitalistic production. The special supply with money-capital, peculiar to the capitalistic system is the cause of future depression. The examination of how the injection of new purchasing power causes more goods to be produced (an increase in physical productivity), and of the fluctuating monetary output (the varying increase in value-productivity) will be the subject of our next chapters.

¹ Compare Schumpeter's article in the *Handw. d. Staatswissenschaften Sonderabdruck*. Compare, also, Schumpeter, *Theorie der wirtschaftl. Entw.*, Anhang zum iii. Kapitel "Kapital und Kredit". "The difference between us and them," he says, explaining the differing views between the ancient and the modern theory, "is that we continue to observe the sum of money in which capital is represented, and try to pierce through this phenomenon while the others are content to see only the quantities of goods which money purchases. Our standpoint relies on two facts. On the one side there was no room in the preceding theory of production and distribution for the fund of money-loans which issue out of the centre of capitalistic life; on the other side the older theory was incapable of explaining the events in the money, credit, or capital market, having once taken such pains to draw aside what they called the deceiving veil of money."

² Compare the chapter dealing with Schumpeter's theory of interest.

CHAPTER III

THE AUSTRIAN THEORIES OF CREDIT

WITH the exception of v. Komorzynski and Schumpeter Austrian authors ¹ have not formed a special theory of credit, but we were able to deduce some such theory from their theories of the function of capital in an economic system. Their idea can hardly be considered as a theory of credit as they neglect the essential element of credit and the significance of changes which follow any credit-expansion. v. Komorzynski (strongly influenced by the much sounder ideas of Böhm-Bawerk and Menger on the function of capital) was the first author to attempt to formulate a special theory of credit and the function of credit.

§ 1

v. Komorzynski's Theory of Credit

v. Komorzynski's theory of credit fails in its examination of the dynamic character of credit and equally neglects monetary phenomena, but it emphasizes instead the influence of credit on the increase of physical output. v. Komorzynski holds that, with the aid of credit, production on a larger scale could be begun which was not possible before. Credit has the power to concentrate means of production in one hand. Hence if a greater amount of means of production is concentrated in one hand, a more successful production can be undertaken than if all means

¹ For the sake of convenience we discuss the theory of v. Mises in connection with Hayek's theory of the trade-cycle which it has so strongly influenced.

of production were split between different owners. Another advantage of this theory lies in laying great stress on a dynamic element of credit, i.e. the fact that the "use of capital", or the power of putting capital at a person's disposal, is the object of a loan. He claims, accordingly, that credit cannot consist in concrete goods, but always consists in capital of a certain amount which any creditor can transform in any kind of exchangeable goods. v. Komorzynski means that capital consists in the power of disposing of goods in such a way as to enable us to use these goods for the purchase of others. If now the creditor, instead of himself producing and instead of obtaining output of his own, confides to the debtor the attainment of output, he transfers this power to the debtor. The economic character of credit, therefore, consists in putting capital at a person's disposal and permitting him the attainment of output. The object of the loan is consequently the "use of capital" or "capital disposal". It is an essential element of credit, v. Komorzynski holds, that the debtor obtains the entire disposal of goods in order to increase his output.¹ Discussing the reciprocal advantage (*die wechselseitige Zuwendung*) for debtor and creditor v. Komorzynski explains the necessity of obtaining output. Credit should be followed by an increase in productivity in order that the debtor can repay his debts. A part of the physical output earned by the debtor is the recompensation of the creditor for allowing the use of his capital. The increase of physical output is due to the fact that the debtor possesses a larger amount of capital goods. The advantage to the debtor is therefore the possession of more complementary goods. It is an increase in output which the debtor gains due to the use or disposal of more capital-goods. The increase in output can only enter in the personal income of the debtor in so far as it exceeds the price of the loan (interest).

¹ This idea was also expressed by C. Menger.

v. Komorzynski has only transformed Menger's ideas into a theory of credit. The advantage of his theory is that it stresses the importance of "capital disposal", which he considers as the principal element of a loan, and of the attainment of greater output. He nevertheless considers physical productivity as the aim of a loan, without examining whether this physical productivity is followed by value-productivity.¹ His conception of capital is also confused. It is not clear whether v. Komorzynski considers as capital the means of production or whether he speaks of the use of capital. The central bearing of his theory, I think, is that the use of capital or capital-disposal (Menger) is the object of any loan, and *that credit is the instrument for providing this power*. The reason for the failure of all these theories is the neglect of the monetary aspect of the phenomena concerned, and of the changes occurring with every credit-expansion.² Physical and value-productivity may be antagonistic. The reason is the double role that money plays as a medium of exchange and as a factor determining future productivity. The task of a credit-policy is to lead production into new productivity and money is the instrument for accomplishing this task although it already bears the germ of future depression. Every credit-expansion leads to changes and the task of science is the examination of the period of change.

§ 2

Schumpeter's Dynamic Theory of Credit

Schumpeter's theory is a theory of describing the change of one equilibrium to the other. Schumpeter advocates a policy of credit-expansion which shall lead the economy in

¹ Value-productivity is important for the payment of the debt.

² Böhm-Bawerk in his *Exkurse* examined changes in the structure of production, but does not explain the cause of these changes. (Compare *Exkurse*, i, ii, and v.)

a new equilibrium and initiate a new phase of development, generally called the period of boom. Although realizing the disastrous effects of such a policy, he considers his policy of credit-expansion as the only method of bringing about changes in equilibria. He, therefore, claims that, dealing with the events of our economic system, we have to consider them *from the point of view of economic development*.

The difference between a static and dynamic method lies in the different examination of events of the capitalistic world—a *static method examines oscillations around the same equilibrium, a dynamic method movements from one equilibrium to the other*. The question is what has to be considered as a static state of economy. "The equilibrium of an economy," as Böhm-Bawerk says,¹ "is not to be compared with the equilibrium of a motionless person, but it may be compared with the equilibrium of a moving person continuously abandoning or regaining its former equilibrium." Schumpeter decides this question similarly.² "The static state is *no state with absence of motion* as it implies the ever-changing flow of productive services and consumers' goods, the growth of population, of capital,³ and the National dividend. For these changes occur continuously and adaptation to them is continuous. They may condition discontinuous changes, but they do not directly and by their mere presence bring them about. *What they bring about automatically are only changes at the margin.*"

Schumpeter means that the ever-recurring changes of the economic system can be anticipated and do not cause the peculiar disturbances of the trade-cycle. A static state of economy is not only assumed for a better understanding of economic development, and of equilibria which temporarily occur, but also because it gives an explanation of what may

¹ *Exkurse*, xiii, p. 168.

² *E.J.*, "The Instability of Capitalism," 1928; see also the articles of Robbins and Ackermann on this subject.

³ Capital = capital goods.

be called a stable development. The study of the tendency of economic processes to re-establish the old equilibrium was often considered as a dynamic theory. As a purely static economy does not exist, the economist has had to examine *two problems* : *The tendency towards re-establishing the old equilibrium and the tendency towards establishing a new equilibrium.* Schumpeter only considers the economic system before a new equilibrium is reached, as equilibrium theory can explain oscillations around the same equilibrium. There are changes, however, which are discontinuous and do not fit in a stable development. *These changes, synonymous with economic progress, are caused by the innovation of the entrepreneur.* The actions of the entrepreneur produce, according to Schumpeter, the cyclical waves of the economic system. The innovation of the entrepreneur consists either in a reduction in cost or in the producing of a new article. In the successful introduction of an innovation lies the possibility ¹ of an increase in exchangeable value. To make this more clear : The entrepreneur who introduces an innovation can produce at a lower cost whilst the other entrepreneurs of this trade have still to produce at the old costs. The possibility of making high gains will induce other entrepreneurs to follow. Costs will rise and profits will diminish gradually. If, therefore, due to the successful introduction of an innovation, excessive gains have been made and competition has increased, competition will soon dry up this stream of profits. The above picture of an increasing and decreasing stream of profits characterizes the phases of prosperity and depression in one trade.

The aforesaid principle of Schumpeter of economic development not only applies to individual firms but also to the development of all industries as a whole. "As shown both by the typical rise of general prices and the equally

¹ The conditions for the making of profits will be discussed in the following section.

typical activity of the constructional trades," Schumpeter explains, "in the prosperity-phase of the business-cycle, innovations cluster densely together, so densely, in fact, that the resultant disturbances produce a distinct period of adjustment—which is precisely what the depression-phase of the business-cycle consists of." These phenomena are due to the following facts: As soon as an innovation has been proved successful it is seized upon by large numbers of people, copied and even improved, until the great number of entrepreneurs brings about a process of adjustment.

We must now consider the monetary side of these problems. "The process of innovation," Schumpeter says, "is the key to all the phenomena of capital and credit." The fact that *innovations are disturbances of a stable development and require large expenditure causes credit to become an essential element of economic development*. The economic process could otherwise be explained in terms of goods if industry grew by small steps along continuous curves. "For in that case," Schumpeter explains, "financing could be done by means of the current gross-revenue and only small discrepancies would need to be smoothed. If we simplify by assuming that the whole circular process of production and consumption takes exactly one period of account, no instruments or consumers' goods surviving into the next, *capital—defined as a monetary concept—and income would be exactly equal and only different phases of one and the same monetary stream.*"¹

Innovations, nevertheless, are discontinuous because they consist "in putting productive forces hitherto untried into practice and withdrawing them from the uses they have served." It is, therefore, necessary to *dispose of these necessary*

¹ Schumpeter, E.J., 1928, "The Instability of Capitalism." Compare, also, Hayek, *Prices and Production*, who aims to show that the economic process runs smoothly if stable development is maintained, provided that savings equal investment.

*means of production.*¹ The difficulty is that these means of production are possessed by others and that they are used in the production of different commodities. Schumpeter's theory of overcoming these difficulties and complications is the following : The money-credit is the instrument which serves the withdrawal of the productive forces from their usual applications by creating new purchasing power. *Innovations, therefore, cannot be financed by ordinary saving.* We cannot turn to savings in order to account for the existence of a fund from which these credits are to flow. "Credit creation therefore becomes an essential part, both of the mechanism of the process, and of the theory explaining it." The entrepreneur has to be provided with purchasing power which will enable him to control the necessary means of production. As the introduction of innovations means a disturbance of the old equilibrium, owing to the tendency of the old equilibrium to re-establish itself, the entrepreneur has to be sufficiently endowed with purchasing power to win his battle. Credit serves the creation of new purchasing power which allows the change of the old equilibrium into another, and forces the whole economic system to obey the commands of progress by a contraction of purchasing power into one hand which makes other people abstain either from production or from consumption. Credit creation is the method by which the putting to new uses of existing resources is brought about through a rise in price, enforcing the "saving" of the necessary amount of them out of the uses hitherto served.²

Until now we have given no explanation of why any innovation can mean a serious disturbance of the economic

¹ All Austrian economists have emphasized the importance of capital-disposal for further production. (Compare Böhm-Bawerk, *Der Kapitalmarkt in voller Entfaltung*, and v. Komorzynski, *Die national ökonomische Lehre vom Kredit*.)

² Compare v. Mises's "forced saving" and Robertson's "imposed lacking", which are other terms for this process.

system. Schumpeter calls our attention to the fact that credit puts the entrepreneur under the obligation to repay his debt. The obligation is a double one : (1) an obligation to the bank which issues the loan and (2) an obligation to those people who are forced into a process of involuntary saving. Both obligations have to be settled (*a*) by returning the money lent and (*b*) by increasing the physical output of production. The payment of the debt, therefore, consists in paying back the money lent, and this payment should be facilitated by both an increase of the physical and monetary output of production. The payment of this debt is the cause of disturbances of the economic system.

Economic development is divided into two phases : a period of boom characterized by an excess of monetary surplus over total costs and a period of adjustment in which the surplus is absorbed. If there is miscalculation of the final surplus in the boom-period, this miscalculation contains the germ of future depression. On the other hand the *increase in physical output, exaggerated by too strong a competition, causes the monetary output to diminish*. The result is that the entrepreneur is unable to meet his obligations.¹ The two antagonistic forces, the attainment of profits and increasing productivity, lead to a process of adjustment which is the last phase of economic development. In this period of adjustment and depression an entrepreneur meets the necessity of deciding whether it is still worth while to continue production. He will be compelled to reduce his cost in order to re-insure the profitability of his trade. At the end of every period of adjustment, therefore, development in further equilibria will occur, because of new stimuli (derived from the consideration of "past costs"). New innovations will lead to a new boom-period and credit will be again

¹ To pay his money-debts. Compare Schumpeter's *Theorie der wirtschaftl. Entw.*, pp. 148, 148 n., 152, 153, 156 ; compare also the chapter "Der Zyklus der Konjunktur," pp. 342, 345, etc., 334, 348, 352, 353, 356.

the instrument to facilitate and finance this development.¹

Economic development in this sense, therefore, will be continuous and credit must be given to Schumpeter for having discovered wherein the function of money and credit lies in a capitalistic system.

§ 3

Profits and Relative Prices of Commodities

In the preceding section we have examined the differences between a static ² and dynamic state of economy and have explained the function of credit in a system of continuous development. Innovations, we have found, are indicative of the process of development. For two reasons they mean a disturbance of the economic system :—

(1) They break through a line of stable development and have to be financed by the creation of purchasing power.

(2) They cause a disturbance of the trade-cycle by involving a special process of adjustment.

Innovations are the primary cause of economic development, credit-creation is the secondary cause. Schumpeter's theory as developed in the preceding section is the following : Any successful innovation means in a capitalistic system an increase in exchangeable value. As any innovation consists either in a reduction in cost or in the producing of a new article, the entrepreneur who introduces the innovation must gain an increase in exchangeable value called entrepreneurial gain. This entrepreneurial gain is a surplus because it exceeds cost, but this surplus tends to vanish. Any increase in exchangeable value will induce other

¹ Schumpeter has described the function of credit as everlasting. Only the continuity of development as above described is a proof of the correctness of Schumpeter's assumptions. We attempt to show in the next chapters how Schumpeter's theory can be further completed.

² A purely static state does not exist, and one must consider such state from the point of view of stable development.

entrepreneurs to follow. Competition will create a greater demand for credit and the creation of additional credits will be necessary to finance this development. But greater competition will make cost rise and entrepreneurial profits diminish. The diminution of the entrepreneurial return is due to our increase in physical output which causes the prices of the product to fall faster than its money-costs. Disturbances of the trade-cycle will follow which will require a process of adjustment. A stable equilibrium will eventually emerge in spite of the prior instability of the kind which is often called over-production.

This short summary of Schumpeter's theory of entrepreneurial profits demonstrates some of his fundamental omissions. Schumpeter has not carefully enough examined the development of industrial life as a whole.

Although his theory can account for the events of economic development, it does not explain sufficiently why a general process of adjustment becomes necessary. His theory of productive credit needs to be completed by an examination of the effect of an expansion of one trade upon the others. The starting point of such an examination is the cost-problem. Schumpeter first discusses the cost-problem from the point of view of the entrepreneur who has successfully introduced his innovation. The entrepreneur must make a gain, he argues, because innovations mean usually a reduction in cost and the entrepreneur at the moment of the introduction of his innovation has the advantage of producing at lower cost.¹ As this gain will induce others to follow, these other entrepreneurs will make a gain in spite of increasing productivity if the following conditions are fulfilled :—

¹ To make this more clear, the price of producers' goods remains constant, but the entrepreneur can produce at a lower cost whilst the other entrepreneurs of this trade have to produce at the old cost. Compare Schumpeter, *Theorie der wirtschaftl. Entw.*, chapter "Der Unternehmergewinn," p. 209. etc.

(1) The costs of their product must still be kept lower than the old costs (the costs of the old method of production).

(2) As any increased supply of goods causes a decline in prices, in order that the gain made by applying the new method becomes higher than the gain made by applying the older method, the increased supply must be sold for the same total sum of prices or for more, or for a sum decreased by an amount less than the fall in costs.

(3) As soon as the costs of means of production increase due to the withdrawal by the entrepreneur of the productive mechanism from other organizations, the monetary output of the new method must also exceed these increased costs.

Schumpeter has not indicated how these conditions can be fulfilled and how long such gains which characterize the period of boom can be maintained. Schumpeter so far has only discussed the cost-problem with regard to one trade. He did not examine the effects of the expansion of one trade upon the others. Although acknowledging that boom-periods are characterized by a rise in prices and periods of adaptation by a fall in prices, he does not examine the ground for these monetary phenomena. The problem which was not sufficiently solved by Schumpeter is the following: Do we conceive that productive credit consists in every additional money exceeding the assets (Aktiva) of the debtor or does it consist in the total amount of money exceeding the assets of all debtors as a whole. Schumpeter considers as a task of credit the forcing of other people into involuntary saving. In addition to this, savings¹ are not sufficient to finance the development initiated by any successful introduction of an innovation, and further we can use a title for money in certain circumstances just in the same way as money itself (deposits). But the clearest statement upon this subject is that the so-called credit-

¹ Compare E.J., 1928, "The Instability of Capitalism," and *Theorie der wirtschaftl. Entw.*, pp. 148, 153 ff., 158 ff.

inflation has to be counterbalanced by an increase in productivity. These statements refer to a general credit-expansion which only can be effected by "credit-creation".¹ One should, therefore, give an account of the conditions of "credit-creation" and Schumpeter's theory has to be completed in this sense.

Engländer's theory and study of relative prices of commodities seems to me a reasonable completion of Schumpeter's theory. It explains what Schumpeter has failed to explain—the connection between one trade and the other.

Engländer considers cost of production as a monetary problem; as he merely treats of money-costs and the relationship between them. The money-income of the consumer is the basis of this relationship, but it is also the basis of price determination.² Not only the subjective estimates of the buyer, but also his total money spending power is decisive for the determination of a certain price. It is even a decisive factor determining the amount of goods to be bought. Any buyer before purchasing a commodity or an increased supply of commodities has to consider the relative prices of other commodities. The relationship between relative prices of commodities Engländer calls elasticity of demand. The conditions for elasticity of demand are the following:—

Demand for a certain commodity will be greater than

¹ It is feasible, nevertheless, that entrepreneurial gains can also be made in an economic system in which economic development is financed by ordinary savings. According to Schumpeter's definition, entrepreneurial gains are increases in exchangeable value due to a successful innovation. "Innovation, unless it consists in producing and forcing upon the public a new commodity, means producing at a smaller cost per unit, breaking off the old supply schedule, and starting a new one." (*E.J.*, 1928.) Any reduction in cost must obviously mean an increase in exchangeable value as we must subtract from the total sum of prices of the old means of production the sum of prices of the lower new costs. This increase in exchangeable value, therefore, does not necessarily afford a change in the total sum of prices of all commodities.

² Engländer has completed the Austrian theories of prices in this sense.

unity if, due to inequality in means, some classes of buyers were excluded from the purchase of the commodity or of the quantity offered ¹ or if the decline in prices was sufficient to induce the next class of marginal buyers to the purchase.

On the other hand demand for a certain commodity will be inelastic or less than unity if the quantity offered, has reached the class of buyers with the lowest incomes, or if the price did not fall sufficiently to reach the next class of marginal buyers.

A rise in prices or a decrease in the quantity offered will have similar effects.²

The aforesaid rules apply for producers' goods and consumers' goods, as both kinds of goods are produced in the expectation of monetary output.

This examination of the reaction of the quantity offered to a rise or fall in prices and vice versa is essential for the understanding of the problem of increasing productivity and diminishing profits, and for the completion of

¹ The subjective estimates of the richest class of buyers determines the amount of commodities to be sold.

² Compare Marshall, *Principles*, p. 203 ff., and Taussig, p. 138 ff. Engländer clumsily speaks of an increase or decrease of relative sums of prices of commodities. This clumsy way of expressing himself has the following reasons: Costs of production, he holds, are sums of relative prices of commodities. The total sums of prices is equal to the total sum of money-incomes of consumers.

As the total money-income is decisive for the amount of goods to be bought, any rise in prices or increase in the quantity offered must have as a necessary result that the demand for some other goods must decrease proportionately. The money-spending power of the consumers must be therefore adjusted to the increased volume of production. Engländer expresses this line of thought in the following way:—

The total sums of prices of one trade are relative to the total sum of prices of all other trades. Any change in the sums of prices of one trade must affect the sums of prices of another trade as both are relative to the total sums of prices. Only a change in the total sums of prices can initiate a boom-period. In other words, development is only possible by creating new purchasing power, and so raising the total sum of prices. Condition for any boom is the fact that the relative sum of prices of the kind of goods which was mostly affected, that is to say the prices of which should have fallen in the greatest extent, has remained unchanged.

Schumpeter's theory.¹ Schumpeter maintains that the profitability of an expansion of production in one trade depends upon whether the increase in the quantity offered can be sold at the same price or for a lower price provided that this lower price multiplied by the quantity offered yields the same total or more. Any innovation causes an expansion of the production of one trade² and this expansion will be justified if the increased supply can be sold at the same total sum of prices as before or for more. But Schumpeter has not carefully examined the effects of such an expansion on other trades. A boom in a certain trade according to Engländer will be possible if the total sum of prices in this trade has risen. A rise in the total sum of prices in one trade must affect other trades according to Engländer's rule that the total money-income of the consumer is decisive for the formation of a certain price. The result must consequently be a fall in the total sums of prices in another trade.³ But the expansion of one trade may affect the others also positively. New purchasing power will create new demand for commodities in other trades. The entrepreneurs of these trades will expand their production at their turn as the higher prices of their trades permit higher profits.⁴ They will apply roundabout methods to increase the physical output as the decreasing

¹ Compare a similar view of Schumpeter, *Theorie der wirtschl. Entw.*, p. 163 ff. We cannot speak of a credit-inflation if the increase in the quantity offered counterbalances it and if the prices of these commodities are sufficient to cover the loaned capital plus interest.

² Any innovation consists either in a reduction in costs or in the producing of a new commodity. The producing of a new commodity will have the same effect over total prices. It causes a relative fall of the total sum of prices of other commodities.

³ Unemployment and crises will be the further result if entrepreneurs cannot counterbalance this downward movement by a reduction in cost. The first reaction nevertheless of any entrepreneur engaged in the losing trade will be as Schumpeter has shown to withdraw and to invest in the gaining trades.

⁴ Compare also v. Mises, *Theorie der Geldesw. der Umlaufsmittel*, who, in chapter v, considers rises in prices, due to the injection of purchasing power, as the cause of extra-profits. These profits are called extra-profits because they exceed the normal receipts (p. 357).

rate of interest ¹ will be favourable for the application of roundaboutness. The upward movement will be general if the total sums of prices of the trade which was most affected *has remained unaltered*. The climax will be reached if the higher prices diminish due to the increasing output of production: A process of adaptation will become necessary ² which may run smoothly if a process of saving is begun. The process of saving will keep the rate of interest low and will permit the maintenance of roundaboutness. Thus having examined the conditions for an upward movement ³ we may devote the second part of this thesis to study the downward movement and the policies which authors advocate to check this downward movement.

¹ The rate of interest falls, due to the creation of additional credits.

² Compare Engländer's theory of the trade-cycle in the second part of this thesis, and the scheme of Engländer's upward movement. Compare also Engländer, *Preise und Konjunktur*, and Engländer, *Grundriss*, ii.

³ Our examination of the theories of the Austrian School was up till now mainly concerned with the function of capital and its influence on the productive activity of a country. We were able to see the cause of the later process of adjustment—the temporarily existing discrepancy between physical and value-productivity. We also have examined Böhm-Bawerk's theory of the function of capital and credit, because it indicates the errors of an excessive credit-supply and its unwholesome influence on the structure of production by describing what really happens in the world of goods. How attempts were made to fuse this theory with a sound explanation of the function of monetary phenomena will be the subject of the second part of this thesis.

SUPPLEMENT

ENGLÄNDER'S PICTURE OF AN UPWARD MOVEMENT

(increasing quantity or decreasing quantity of com. or changes in prices.)	erhöhte Menge, eventuell verminderte Menge oder originäre Preisänderungen.	(new goods.) Neue Güter.	Rationalisierung, (technical progress.)	Zinspreisherabsetzung, (decreasing rate of interest.)
(Impulse.) Anlass zum Aufschwung.	positive Preissummenreaktion. (elasticity of demand is greater than unity.)		Produktionsumwege. (round about way methods.)	
	erstmalige Erhöhung der Gesamtpreissumme.			(first rise in the total sum of prices.)
Fortsetzung und Verstärkung des Aufschwunges.	(the boom period continues, the upward movement is reinforced.)	Erweiterungen von	Erzeugungsanlagen	(the number of investments is increasing.)
	weitere Erhöhungen der Gesamtpreissumme.			(further rises in the total sum of prices.)

Explanation of Engländer's picture of an upward movement

If elasticity is greater than unity in a certain trade conditions are ripe for an upward movement in this trade. The favourable conditions of this trade may lead to an increased production which must be supported by additional credits. Lengthening methods are applied which increase the demand for other commodities and therefore lead to a more and more general increase of production which must find the support of a proportionate credit-expansion. The favourable rate of interest facilitates more investments. The total sum of prices is increasing proportionately. Profits will be made.

BOOK II

THE DOWNWARD MOVEMENT

INTRODUCTION. The Trade-Cycle.

- I. BÖHM-BAWERK'S THEORY OF INTEREST, A NON-MONETARY THEORY OF THE TRADE-CYCLE.
- II. SCHUMPETER'S THEORY OF INTEREST, A MONETARY FORM OF BÖHM-BAWERK'S THEORY OF INTEREST.
- III. THEORIES OF THE TRADE-CYCLE COMBINING MONETARY CHANGES AND CHANGES IN THE STRUCTURE OF PRODUCTION.
 1. v. Mises's Theory of the Trade-Cycle.
 2. Hayek's Theory of the Trade-Cycle.
 3. O. Engländer's Theory of the Trade-Cycle.

INTRODUCTION

THE TRADE-CYCLE

AS the result of crises is disastrous, we must find a remedy by giving a true picture of the cyclical movements of the economy. In such a picture we may hope to find the causes of crises and the means to overcome them.

The study of the upward movement enables an examination of the downward movement and we have indicated that the upward-movement bears the germ of future depression. Credit according to Schumpeter's doctrine stimulates the productive activity of a country and helps the attainment of greater monetary output. But can the banking system on the other hand keep production within such limits that no disproportion between physical and value-productivity can arise. The question why the increase in physical output is not always followed by an increase in value, as it would be according to Böhm-Bawerk in an economic system where money does not influence production,¹ *is the main problem which we have to examine in the second part of our thesis.*

In the preceding part of this thesis we have examined the conditions for an upward movement which were differently treated by the Austrian School. According to their different treatment of the subject we can divide the authors belonging to this school in two different groups—the older and the younger Austrian School. We have

¹ Böhm-Bawerk seems to assume that money does not create any disturbances in an economic system, his neglect of monetary phenomena otherwise being incomprehensible.

reckoned among the older Austrian School, with the exception perhaps of Carl Menger who with the introduction of the popular notion into science has opened a new area for economic investigation, those authors who neglected the monetary aspect of the subject, but who gave a striking analysis of its non-monetary side. Credit must be given to the younger Austrian School for having developed the monetary problem. But they would not have completed their task without having examined the causes of the downward movement. The older Austrian School did not give a complete theory of the trade-cycle, but we can deduce some such theory from their other statements.¹ Before dealing with the Austrian theories of the trade-cycle it is necessary to define their task and to select the most important phenomena of the downward movement. The analysis of the downward movement is so very important since every distinctive phenomenon gave rise to a particular theory of the trade-cycle, the failure of such a theory is obvious because of the non-consideration of so many other phenomena inseparable from it. With the selection of the most important phenomena of the downward movement we intend to demonstrate the cause of so numerous theories of the trade-cycle. v. Hayek defines the task of a theory of trade-cycle with the following words ²: "Firstly, it must be deduced with unexceptionable logic from the fundamental notions of the theoretical system ; secondly, it must explain by a purely deductive method those phenomena with all their peculiarities which we observe in the actual cycles."

Some of the phenomena ³ observed in cyclical fluctuations, particularly price formation and its influence on the

¹ I especially refer to Böhm-Bawerk whose theory of interest easily can be adjusted to our purposes because of its examination of the connection between the rate of interest and the investment-activity.

² *Monetary Theory and Trade-Cycle*, p. 32.

³ Compare *Monetary Theory and Trade-Cycle*, pp. 28 ff., and for the following quotations, pp. 33, 34.

direction and the volume of production of a certain trade, have been explained by the theory of equilibrium or in other words by a static method. A theory merely discussing the aforesaid events is incomplete. A theory of the trade-cycle, as Hayek says, need only examine the movements of certain prices and explain their influence on production and consumption. A theory dealing with the process of change, therefore, is only concerned with the explanation of the rise in the price-level in the period of boom and the fall in the price-level in the period of depression. The laws of prices on the other hand, as they were believed before, do not influence the trade-cycle. Prices indicate an equilibrium-position ; a theory of prices, therefore, cannot explain changes in the capitalistic system of which prices are only the final result and achievement. A theory of prices is inadequate for the explanation of phenomena of the trade-cycle as it only describes the formation of a certain price without examining the correlation between prices and the general movements of the capitalistic system.¹ For similar reasons Hayek has refuted a statistical method of investigation. "It might be shown, for instance," he holds, "by statistical investigation that a general rise in prices is followed by an expansion of production, and a general fall in prices by a diminution of production ; but this would not necessarily mean that theory should regard the movement of price as an *independent cause* of movements of production."

A theoretical explanation of all phenomena concerned is essential and statistical investigation can only show that either there are phenomena which a theory does not explain or that it is impossible to discover such phenomena. Statistics, therefore, can verify a theory of trade-cycle in a negative sense, but they cannot confirm such a theory

¹ For these reasons we gave no account of the Austrian theories of prices, and have only assumed their general knowledge.

positively. There are data and phenomena in the trade-cycle the correlation of which cannot be shown without theoretical explanation. Therefore a theory merely explaining a single phenomenon is inadequate. It does not penetrate into the *nervus rerum*, that is to say it does not satisfactorily and sufficiently explain the cyclical movements of the economy.

We have mentioned that theories of the trade-cycle mean a sort of forecasting the future. The trend of economic theory, as Hayek¹ expresses it, "is to find a remedy against crises." We find, therefore, a great number of theories which try to fulfil this task. As every particular phenomenon of the depression was considered as the cause of crisis, many theories only took such a particular phenomenon as their starting point and consequently failed in their final conclusions, attaining only a partial solution. Some such phenomena, which all are necessary elements of the downward movement, are²:—

(1) The fluctuations of demand from future to present goods and vice versa. These fluctuations depend on fluctuations of the rate of interest and according to the theory of Wicksell, developed by modern authors, the trade-cycle is a result of the fluctuating rate of interest (Keynes, Hayek).

(2) A statement made by all theories of under-consumption. The rising rate of saving causes losses in the trade of consumption goods which in the short period necessarily must influence the production of capital goods (Durbin).

(3) The over-production of the specialized capital-goods. The perfect division³ of labour causes labour to become more and more specialized, and therefore shifts from one

¹ "The Trend of Economic Thinking," *Economica*, 1933.

² Compare Durbin, *Purchasing Power and Trade-Depression*, pp. 147 ff.

³ Human labour as well as plant and machinery.

trade into the other caused by dynamic changes do not run smoothly. The economic system has to undergo serious disturbances before a new equilibrium can be established.

(4) The bearishness of any banking system which follows any credit-expansion. We may explain this attitude by the more and more diminishing confidence in the solvency of the entrepreneur-debtor, and by a shortage in the supply¹ of cash-money. The problem is whether the banking system can meet the more and more rising demand for cash-money.

(5) The competition of too great a number of entrepreneurs to attain entrepreneurial gains which causes these gains to diminish and leads to over-investment (Schumpeter).

All these phenomena are indicative of the beginning of depression and all theories of the trade-cycle more or less are based on these observations. They can be divided in monetary and non-monetary phenomena, but we should never forget that all these phenomena are related. In other words a theory of the trade-cycle shall not neglect the monetary side, but it should not over-estimate it. It should fuse both elements, the monetary and non-monetary, into a logically consistent theory of the trade-cycle. Hayek's distinction between monetary and non-monetary theories is based on these observations. Nevertheless he later came to the conclusion that the main difference between different theories of the trade-cycle consisted *in the different conception of the cause of changes in the capitalistic system*. Not only changes in the inner objective exchangeable value of money¹ but also their influence on the structure of production has to be considered. *A theory of the trade-cycle must explain both changes in the structure of production and changes in monetary value.*

Thus having described the most important elements of the trade-cycle and having defined its contents we are able

¹ v. Mises uses this term for the more modern term "Purchasing Power of Money".

to return to our main task—the investigation of Austrian theories of the trade-cycle. First must come an examination of the development of such theories from Böhm-Bawerk to Hayek. Following v. Hayek's example we may divide the Austrian theories of the trade-cycle in monetary and non-monetary theories, and amongst these monetary theories we may distinguish between theories which regard¹ the superficial phenomena of changes in the value of money as decisive factors in determining cyclical fluctuations, and those which lay emphasis on the real changes in the structure of production brought about by monetary causes.

A purely monetary theory of the trade-cycle does not exist among the Austrian theorists because even Schumpeter has laid great emphasis on real changes in the structure of production. Our examination of Austrian theories of the trade-cycle deals with the theories of Böhm-Bawerk, v. Mises, Hayek,² Engländer, and Schumpeter. Although Böhm-Bawerk did not found a complete theory of the trade-cycle, his theory of interest may be considered as a sufficient non-monetary theory of the trade-cycle. The study of his work is essential as Hayek and Engländer have adopted Böhm-Bawerk's line of thought, and have tried to improve it where Böhm-Bawerk has failed. But, also, Schumpeter's theory is partly based on Böhm-Bawerk although his theory does not rely on Böhm-Bawerk's picture of the productive process.

¹ Compare Hayek, p. 41.

² For influence upon Hayek compare the work of Strigl.

CHAPTER I

BÖHM-BAWERK'S THEORY OF INTEREST—A NON-MONETARY THEORY OF THE TRADE-CYCLE

IN the first part of this thesis we have given a short account of Böhm-Bawerk's theory of the function and formation of capital. Capital is to increase physical productiveness. In his theory of interest he tries to find an explanation for the correlation between physical productivity and value-productivity, or, as modern authors would say, between investment and profitability. It can easily be pointed out that Böhm-Bawerk has failed to explain these events through neglecting monetary phenomena, but he threw much light on the connection between physical productivity and the rate of interest.¹ Physical productivity should be the aim of every enterprise, but its real aim is the attainment of high money-profits. Böhm-Bawerk because of his neglect of the monetary phenomena was unable to solve the problem of this discrepancy between physical and value-productivity which temporarily exists in the trade-cycle. In the temporary ² discrepancy between physical productivity and value-productivity lies the whole problem of the trade-cycle.

¹ Every modern theory is based on this connection, and v. Hayek, for example, only continues Böhm-Bawerk's line of thought, showing the connection between a production of more or less stages and the rate of interest.

² It was a fault to regard physical productivity as the cause of interest. This was a consequence of a wrong conception of capital. Physical productivity is a condition of future welfare, but it may be inconsistent with the purposes of the individual. The insufficient distinction between physical productivity on the one side and the increase in exchangeable value on the other has led to errors. We have to refer to both for examining the phenomenon of interest.

Böhm-Bawerk's theory of interest can be considered as a theory of the trade-cycle because of its attempt to find the value-productivity of capital. For authors dealing with interest it soon became apparent that the problem of interest is deeply connected with the productive activity of a country. We may even go so far as to say that the whole problem is confined to how production is related to the rate of interest. This question, nevertheless, is a problem of the trade-cycle. The question of the existence and the question of the determination of interest are different. If we are able to point out why interest will always exist, we have solved the question of the existence of interest ; we have not solved, however, what determines the payment of interest. It is true that the reason for the existence of interest is also the reason for the payment of interest ; we have not explained nevertheless under which conditions and circumstances we are able to pay interest. The question whether we are capable of paying interest for the loan of capital is the main problem of a theory of the trade-cycle. Any theory of interest may be considered as a theory of the trade-cycle because of its attempt to solve this question, the solution of which can be found in the relation between interest and investments.

Böhm-Bawerk ¹ has divided his examination of the problem of interest into these two questions (discussed above) :—

- (1) Why does interest exist.
- (2) What determines any particular rate of interest.

Böhm-Bawerk's answer to these questions is based on two principles ²:—

¹ Compare *Kapital und Kapitalzins*, i Teil. "Produktivitätstheorien," and Fisher's *The Rate of Interest*, p. 474, where Fisher refers to these questions. Fisher maintains that these questions cannot be treated independently even if one understands by interest only positive interest as Böhm-Bawerk does.

² It will be realized that Böhm-Bawerk's theory can adequately be reproduced in few words as he himself has pointed out.

The one is his theory of value and he only improves the idea of C. Menger. The value of goods does not depend on the value of their cost of production, but it depends on the utility which they yield to satisfy the personal wants of the people. The value of the means of production (producers' goods) depends according to this principle on the value of their product or more accurately on the value of the last product serving the immediate satisfaction of our wants.

This line of thought was further developed by Irving Fisher who considers borrowing and lending as a transfer of income.¹ Spending and investment differ only in degree, depending on the length of time between the expenditure and enjoyment.² Fisher's explanation of the psychic causes of saving and investment is more adequate although he omitted to show the connection between savings and investment-expansion. The other principle based on this theory of value is the theory of the different valuation of present and future goods. The demand for capital is determined by this valuation. Böhm-Bawerk's main point is that every new product constitutes a future good, because it is produced by the combination of certain means of production in a certain period of time. The question is what determines the value of future goods. Böhm-Bawerk comes to the conclusion that (a) the value of the means of production is the present value of their future product, and that (b) the present value of future goods is represented by the discount

¹ Irving Fisher, p. 11, distinguishes three kinds of incomes : (1) Enjoyment or psychic income consisting of agreeable sensations and experiences ; (2) Real income measured by the cost of living ; (3) Money income consisting of the money received by a man for meeting his cost of living.

² It was this abstract statement which has such a long time hindered the explanation of interest. It has induced many authors to consider interest as a phenomenon of value, whereas interest is a monetary phenomenon. The problem of the determination of interest can only be solved by an examination of the connection between the fluctuating monetary output and the rate of interest. As we shall see later, even Hayek seems to believe that, by excluding the unwholesome influences of money, interest could be explained by a mere difference in value, and that interest is any increase in physical output.

on the value they will acquire when they become present goods. Present goods gain a higher price than future goods for three reasons ¹:—

(1) The under-valuing of future wants and of the goods yielding us satisfaction.

(2) The difference of the proportion between our wants and satisfactions in different periods of time. (The scarcity of goods at present influence us to economize with present goods, because of the insufficiency of their present supply to satisfy the demand.)

(3) The technical fact that production requiring time or in other words following roundabout methods increases productivity which establishes a technical superiority of present over future goods.

The result is that the disposal of present goods becomes more important and more valuable. A person, therefore, who disposes of goods at the present moment receives a surplus of future goods, or in future value.² But Böhm-Bawerk does not explain why the person who disposes of goods at the present receives a surplus on future value.³ His explanation is based on the idea that present goods are more valuable and his theory of value. But the mere fact that present goods are more valuable does not account for the surplus in future value. If Böhm-Bawerk had said that the disposal over present goods was more valuable than over future goods, he would have come nearer to the solution of the problem of the existence of interest. He might then have found out that capital is necessary to obtain the disposal over present goods and interest is the price for this use of capital.

Böhm-Bawerk forwards the following arguments for the

¹ Compare also Fisher, p. 474, where he refers to Böhm-Bawerk's main arguments.

² Compare Böhm-Bawerk, i, p. 132.

correctness of his proposition that future goods and future wants are undervalued ¹ :—

(1) The incompleteness of the perceptions we have of our future wants,

(2) a lack of will, due to a fault of character,

(3) the incertitude and shortness of our life,

(4) the size of an individual's income.

But Böhm-Bawerk was aware that with these arguments he could only explain a consumption loan. He, therefore, claimed that the scarcity of supply forces us to value present goods more than future, but he himself analyses the ever-changing conditions of supply and demand in a way which might have led to entirely different conclusions.² Analysing the subjective estimates of different people and their attitude towards the supply with capital, he finds that people behave in a different way according to their different endowment with present goods. There are four possibilities :—

(1) The supply of present goods is insufficient for a certain person. Present goods obtain a high agio.

(2) The supply of present goods is sufficient, but for some psychological reasons present goods are preferred.

(3) The supply of present goods is sufficient or even more than sufficient, but their owner discounts present goods and prefers future goods.

(4) The supply of present goods is hardly sufficient, but future goods are preferred because of the possibility of a greater supply in the future.

Böhm-Bawerk, however, does not explain the significance

¹ Compare pp. 328–338, Böhm-Bawerk, ii, iv Buch, i Abschnitt, compare also Fisher, *Theory of Interest*, chapter iv, who maintains that the degree of impatience depends on a person's income, i.e. the size of his income, its distribution in time, its composition, and its probability.

² Compare Böhm-Bawerk, ii, p. 194, 355, 356, 357 (iv Buch, i Abschnitt, "Gegenwart und Zukunft in der Wirtschaft") and pp. 331, 332, etc. Compare also Schumpeter's theory of interest.

of these different attitudes for the trade-cycle. The ever-changing conditions of supply and demand do not yield a sufficient explanation of interest. It is not sufficient to state that for some reason there is a superiority of value of present over future goods, or of future goods over present goods. The question is why are we once willing to pay a higher price for present goods, once for future goods.

Böhm-Bawerk accordingly should have examined which are the causes of the different conditions of supply and the actions of those responsible for the different supply. Böhm-Bawerk's theory of values does not suffice to yield a satisfactory proof for his proposition. Böhm-Bawerk tries to explain why present producers' goods or present consumers' goods obtain greater value ; but he overlooks the fact that the higher valuation of present producers' goods or present consumers' goods depends on the supply and that their supply is determined by the possibility of the attainment of monetary output. His proposition that present goods can be used for present or future purposes, future goods only for future purposes, is not sufficient to establish a superiority of value of present over future goods. The question arises whether the present utilities an article yields are more important than future ones. If the present utilities are very important, then goods derive their value from the present one. This is according to the law that goods able to be used alternatively,¹ but yielding different marginal utilities, derive their value from the highest degree of marginal utility. It must be realized, however, that this is more a question of marginal profitability than of marginal utility and this profitability depends on the rate of interest.

The ever-changing conditions of demand and supply depend on the reaction of the entrepreneur on changes in monetary output. The production of future goods and the production of present goods do not go hand in hand although

¹ Compare Böhm-Bawerk, ii, pp. 202, 203.

they are connected. Their supply is regulated by the market where the desire of obtaining highest monetary output is dominating. Present or future goods are produced for monetary output. Investments in one or the other trade are made with regard to the possibility of the making of profits in one or the other trade. The marginal rate of profit¹ is the rate which just covers interest. It has been, therefore, maintained that the money-rate of interest is the factor determining the production of present and future goods. If the rate of interest is low, more future goods are demanded because of the possibility of greater roundaboutness. Accordingly there is greater possibility of profits in trades producing future goods. If the rate of interest is high less investments will be made in future goods, as less lengthening methods are applied and the possibility of the making of profits is smaller. This simple investigation of the events of the trade-cycle proves that the supply of present and future goods depends on the varying profitability of one or the other trade. Interest is paid in the expectation of a future gain and this future gain is the factor regulating the supply of goods and the payment of interest.

In order to explain interest we have to consider the single components of interest, which consist in the monetary output we obtain by the sale of our products. The problem is whether, after the passing of a period of time, these sums of money permit a certain gain to be made and whether this gain exceeds the rate of interest.¹

The fault committed by Böhm-Bawerk has been already mentioned : the neglect of the monetary side of the problem. Interest cannot consist in concrete goods. Böhm-Bawerk either mistook the whole physical output of production for

¹ We are anticipating Schumpeter's theory of interest. Interest is, according to Schumpeter, a price for money-loans which enable us to start production and which we borrow in the expectation of future gains. Compare also Wicksell's criticism of Böhm-Bawerk's theory of interest in *Wert, Kapital und Rente*, 1893, pp. 87 ff.

interest, or sinned against one of his own postulates, the equality of physical and value-productivity.¹ Any theory of interest, he once claimed, should prove that the increase in physical output is followed by an increase in value. Böhm-Bawerk, nevertheless, did not carefully examine the components of value-productivity, the entrepreneurial gain and interest. Otherwise he would have found that the payment of interest is the direct outcome of the entrepreneurial gain. He then would have been aware that money, "which represents in its indifferent form all goods" (Böhm-Bawerk, p. 331), has some connection with the explanation of interest.² His theory of value, therefore, is unable to support the proposition that present goods are more valuable than future; if we discount future goods, it is only a result, but not the condition of the payment of interest. Böhm-Bawerk also does not explain why future products should have the same value as present ones, as our valuation of present goods may have changed and we may prefer future goods at the time these future goods have developed into present goods. His observations of the discount of future products are of importance for an analysis of the trade-cycle, but they do not explain interest³ as a theory which merely states a

¹ Böhm-Bawerk, criticizing the old productivity theories had explained their failure with their inability to explain value-productivity. It is, he holds, not obvious that physical productivity is always followed by value-productivity. Value-productivity is the faculty of producing more value than the applied means of production, but can also mean the faculty of producing *more value than the actual rate of interest*. This is the only way to interpret Böhm-Bawerk's criticism of the old productivity theories, i.e. the proposition that any application of means of production will yield an increase in value, which nevertheless may be smaller than the discounted value of the future product.

² Compare pp. 156, 157, Böhm-Bawerk, ii, ii Abschnitt, also p. 149. Böhm-Bawerk is sometimes not too far away from modern theory. He often states that the decision of the individual influences the direction of production. It is therefore only necessary to adjust his theory to the particular circumstances of a money-economy. (Compare Schumpeter's interpretation of Böhm-Bawerk's theory.)

³ The undervaluation of future goods is one of the reasons for the dependence of the labourer on the capitalist. The capitalists can buy his labour by

superiority of value of present over future goods is incomplete and it is necessary to show why the finished product is more valuable than the applied means of production.

Also Böhm-Bawerk's third ground needs further explanation. Fisher objects to Böhm-Bawerk's third ground that it does not explain the payment of interest. "But Böhm-Bawerk," he says (p. 478) criticizing Böhm-Bawerk's method of proof, "is mistaken in ascribing any part of this result to the fact that the longer processes are the more productive. In his tables he assumes the existence of one or both of the two other factors—the relative under-valuation for the present as compared with the future and the perspective under-valuation of the future, due to the lack of intellectual imagination or emotional self-control. It is these elements, and these alone which produce the advantage of present over future goods which the tables display."

I think Fisher's proposition¹ that the superiority of present over future goods is based on psychological elements is incorrect. He forgets that the study of the process of investment is necessary for a complete explanation of the factors determining the rate of interest. Such investigation would show that present goods have an important function in the process of investment for which even interest is paid. Irving

providing him with the necessary means of livelihood. Compare Böhm-Bawerk, ii, pp. 481 ff., iv Buch, 3 Abschnitt, "Der Kapitalmarkt in voller Entfaltung." On the other hand, the trade-cycle consists in shifts from the production of capital-goods to the production of consumption-goods and vice versa, as v. Hayek has pointed out. An analysis, therefore, of the factor determining the valuation of goods and regulating their supply is of great importance for every theory of the trade-cycle.

¹ See Haberler for a defence of B.-B. in *Q.J.E.*, 1931. Haberler holds that Böhm-Bawerk introduces with his third ground the process of investment. "The yield-increase of the roundabout way is one of the conditions per quam whilst the limitation of the economic period is the *conditio sine qua non*." But Haberler should have pointed out that the question of the determination of interest includes the problem of the payment of interest whereas the question of the existence of interest inquires why interest has to be considered as a continuous stream of income. The dynamic character of interest, as we shall explain later, is the reason for the existence of interest and that interest is a continuous stream of income. The question of the factors determining the rate of interest is the main problem of the trade-cycle.

Fisher should have rather examined a more important mistake of Böhm-Bawerk.

In the third ground of Böhm-Bawerk's famous theory of interest the error of the earlier productivity theories which explain interest by future greater physical productivity is concealed. The application of roundabout methods enables the attainment of greater physical output, but this does not imply an increase in value. The third ground, therefore, cannot, according to Böhm-Bawerk's own postulates for a theory of interest, explain interest. There is, nevertheless, an important connection with the existence of interest. If we substitute means of subsistence instead of means of production, the third ground, as Schumpeter points out (*Theorie der wirtschaftl. Entw.*), obtains quite a different meaning. The third ground correctly interpreted will then mean what we may call, like Irving Fisher, *investment opportunity*, and will indicate in other words the possibilities of further investment. It is therefore necessary to examine the connection between capital and this third ground. Schumpeter gave the following interpretations which is consistent with Böhm-Bawerk's theory of the function of capital. Capital will enable the entrepreneur to start more productive roundabout ways. As a matter of fact, we find that the entrepreneur provides the labourer with means of subsistence which he has bought with his own or with borrowed capital, and exchanges for this present goods the productive power, labour. Capital is then the force which moves the economic system from one equilibrium to the other. The actual rate of interest determines actual investment, that is to say as the fund of subsistence consists in savings of previous periods the rate of savings determines the actual rate of investment. Böhm-Bawerk himself inclines more to speak of the means of subsistence when he intends to explain interest. It is the purchasing power embodied in these means of subsistence for which we pay interest.

Böhm-Bawerk's third ground rather explains capital-formation than interest. The inclusion of the so-called "productivity of capital" was therefore necessary to illustrate this process of investment. Only means of production are holders of future productivity and their demand depends on future investment-opportunity. If there is investment opportunity we will exchange present for future goods. Every increase in roundaboutness requires an increase in means of production because this increase in future goods leads to an increase in present goods. Accordingly more future goods are produced and through this increase in future goods the output in present goods can be increased. Böhm-Bawerk has with the inclusion of his third ground therefore given an explanation of the formation of capital rather than the determination of interest. The connection between capital-formation and interest is, however, necessary for solving the question, of the payment of interest. The problem which should have been solved by Böhm-Bawerk consists in an examination of whether the above increase in physical output is followed by an increase in exchangeable value. The question is, in a money-economy, whether the increase in the investment activity will not be followed by serious disturbances. We have to investigate therefore whether the payment of interest is possible, that is to say whether the increase in exchangeable value will be great enough to cover interest.

Interest is paid in the expectation of an increase in exchangeable value; however, the inclusion of a third ground in an explanation of interest is indispensable for illustrating the connection between investment and interest on the one side and profits and interest on the other.

Fisher criticizes only Böhm-Bawerk's method of introducing this term.¹ Böhm-Bawerk's third ground can be

¹ Compare Irving Fisher, p. 474: "My criticism of this third thesis, however, does not consist in denying the existence or importance of the technical 'element', but in denying the soundness of the way in which Böhm-Bawerk applies it."

no reason for the existence of interest because the length of the roundabout method depends on the height of the rate of interest.

Savings on the supply of capital or, as Fisher says, the exchange between present and future incomes depend on the impulse to invest for deferred enjoyment.¹ Lending, therefore, means to participate in the productivity of future investments. One borrows to obtain future productivity or future gains, one lends to secure future enjoyment. Spending and investment differ only in degree depending on the length of time between the expenditure and the enjoyment (p. 9, "The rate of interest"). Fisher means that interest is paid because of future investment-opportunity, i.e. because the future rate of return over cost is decisive for the payment of interest. According to his theory, the future rate of return over costs (exceeding the rate of interest) induces us to pay interest. Fisher's theory approaches very much a modern solution dealing with the monetary side of the problem. His rate of return over cost can be understood as a monetary phenomenon. This short summary of Fisher's theory makes us believe that Böhm-Bawerk and Fisher differ mainly in the third ground of Böhm-Bawerk's exchange theory. But it seems to me that Fisher has answered only the question concerning the determination of interest, and has not explained the existence of the rate of interest,² although he admits, p. 12, that "the second

¹ Compare Fisher, p. 29. "The problem of the rate of interest is entirely a problem of spending and investing, of deciding between various possible enjoyments, constituting income, especially between relatively small, but immediate enjoyments. . . . There is an eternal conflict between the impulse to invest and the impulse to spend. The impulse of a man to spend is caused by his impatience to get enjoyments without delay, and his impulse to invest is caused by the opportunity to obtain relatively more enjoyment either for himself or for others. And compare also pp. 151, 154.

² Compare Haberler, *Q.E.J.*, 1931. "If one considers interest only as the exchange-ratio between present and future goods, the explanation of interest can mean nothing but the assignment of the reasons why the exchange between present and future goods takes place at all. But if we understand by interest only positive interest, there is a perfectly good sense

question embraces also the first, since to explain how the rate of interest is determined involves the question of whether the rate can or cannot be zero, i.e. whether a positive rate of interest must necessarily exist". On the other hand, Fisher has given no complete explanation of what determines the payment of interest. He has only indicated the possible payment of interest provided there is an increase in exchangeable value.¹ Böhm-Bawerk,² for these reasons, may have combined his picture of the productive process for an explanation of the rate of interest. This picture clearly demonstrates the influence of the rate of interest on the structure of production, and, therefore, we may consider Böhm-Bawerk's theory as *the first task of*

in which one may distinguish between explaining why there always is interest and explaining how its rate is determined." After an examination of the connection between productivity and the rate of interest, the question can easily be decided. Interest must be positive because of investment opportunity, but this investment opportunity is also the reason for the existence of interest. It is true that the payment of interest depends on the demand for capital, and according to this demand interest is positive, negative, or zero. But the continuous possibility of further investment justifies Böhm-Bawerk only to treat positive interest, as for this reason the demand for capital and capital-goods always will be positive. Böhm-Bawerk is aware that interest cannot be negative because of the continuous possibility of further investment (roundaboutness). The accumulation of capital takes place for the same reasons as savings are made with regard to future greater productivity. For these reasons it is more advisable to treat the question after the existence and determination of interest separately.

¹ It must be realized that we consider the question of the determination of interest and the question of the existence of interest in a different way than Irving Fisher does. From his point of view the question of the determination of interest and the question of the existence of interest may not be very different from our point of view: the question of the determination of interest involves the question of the payment of interest which neither of the authors has solved.

² Compare Böhm-Bawerk, pp. 402 and 403, *Positive Theorie*, ii, iv Buch, 11 Abschnitt, ii Hauptfall "Der Kapitalgewinn der Unternehmer." He claims that the possibility of applying more and more lengthening methods is a sufficient reason for the rate of interest remaining positive. If the supply of present goods would not exceed the demand *no interest would be paid*. Only if the supply with present goods is scarce, and therefore the number of those great enough who demand present goods, interest will be paid. There is nevertheless, Böhm-Bawerk concludes, no possibility that interest would not be paid. The circumstances at the market will always cause the supply of present goods to be scarce, and more productive roundabout ways have to be applied.

describing the trade-cycle. His roundabout ways demonstrate the process of investment. In a capitalistic system the connection between productivity and the rate of interest can only be understood from this point of view. Only the introduction of lengthening or shortening methods can be the reason for the payment of interest. If there would be no inventions, that is to say no change in the length of the productive process,¹ there would be no need for more means of production, and accordingly no demand for the power to purchase them. The aforesaid demand is one of the causes of changes in the structure of production. Böhm-Bawerk's ² fault is the neglect of an investigation of the immediate effect of such changes.³ But then his neglect of monetary phenomenon may have hindered him to give a satisfactory theory of the trade-cycle.⁴

His third ground illustrates the process of investment (capital-formation), and a theory of the trade-cycle is an examination of the connection between investment and the rate of interest.

His theory can rather be interpreted as a theory of the trade-cycle, in which the third ground is a necessary element than be used for an explanation of interest. For an explanation of interest the third ground is insufficient especially from the point of view of a theory analysing only stationary events. The length of the roundabout way depends on the height of the rate of interest. Interest, therefore, cannot be determined by something which is determined by interest itself. This would mean circular

¹ Compare Böhm-Bawerk, *Exkurse*, i, ii, pp. 8, 9, and iii, p. 115. Böhm-Bawerk states that inventions consist in changing the length of the productive process.

² Böhm-Bawerk's ideas were continued by Hayek and O. Engländer. With their theories we shall deal later, but we now have to content ourselves with showing the connection between the modern and the older investigation.

³ Compare p. 93 of this thesis.

⁴ v. Mises's examination of the connection between relative prices of commodities has yielded the correct method of examining short period phenomena and short period changes.

reasoning. But if interest should have no connection with productivity, what is the reason for its payment? The other two grounds do not suffice of themselves—they only explain the interest of a money-loan (spendthrift) without explaining producer's credits.¹ Therefore the introduction of the third ground was necessary, but with a different interpretation than Böhm-Bawerk's. His third ground not only indicates the possibilities of further investment, but because of its reference to changes in the structure of production furnishes also a picture of the productive activity of a country. The trade-cycle consists in a transition from more stages to less stages and vice versa. The examination of the monetary results of such a transition brings us nearer to the solution, a method applied by v. Hayek and O. Engländer. Their idea is to examine the connection between the cyclical movements of capital and the productive process. Böhm-Bawerk's picture of the productive process then clearly shows that interest is paid in the expectation of future gains. To say that the length of the roundabout method depends on the rate of interest is only another form of stating that the application of lengthening methods depends on its future profitability or future gains.² Investment-opportunity depends on the future rate of return over cost. The discrepancy between cost and return is the determining factor for future investment. In this sense Fisher has already advanced Böhm-Bawerk's theory.

But Fisher's theory again can only be understood from its monetary side. Engländer and Hayek, therefore, have

¹ A point made already by v. Philipovich, p. 359, "Die Tatsache geringerer Wertschätzung der gleichen Güter in der Zukunft in Vergleiche mit solchen der Gegenwart ist gewiss richtig beobachtet und die erklärt uns manche Erscheinungen des Darlehensmarktes, vor allem beim Konsumtivarlehen."

² As Fisher in *Objections Considered* says, the difference between his opinion and Böhm-Bawerk's is not very great; compare Böhm-Bawerk, ii, 1, p. 431, and also pp. 316, 317, especially *Exkurse* iv, compare also Marshall's similar opinion, p. 359.

examined the monetary side of the problem ; in other words the subject of their examination was the relation of capital to the number of stages of production ; but both came to different conclusions. Engländer¹ found that in a period of boom too much capital is set free which is not further employed in production. Entrepreneurs use their gains for savings instead of for consumption and the rate of savings increases to the extent that it exceeds investment.² Hayek holds that the trade-cycle consists in the movement of the rate of interest which lowers money-cost and causes the transition from one equilibrium to the other. Hayek continues a line of thought begun by C. Menger. Menger had already realized that a capitalistic system is characterized by the amount of existing goods of higher order. He had included them in his notion of capital, considering them as a guarantee for future productivity and progress. His idea was expounded by Böhm-Bawerk. According to this author the *economy is a continuous stream of goods regulated by the one important principle, viz. whether present or future goods are preferred*. This principle, as Hayek points out, makes an analysis of the events of the economic world possible. Böhm-Bawerk's conclusion is based on the following observation. The characteristic feature of capitalistic production is that the productive services of land and labour are more used for future than for present enjoyment ; in other words they are used in roundabout methods. This causes present means of production to be scarce and the result is a greater number of intermediate products corresponding to the application of indirect methods from which higher future productivity is expected. The demand for

¹ Böhm-Bawerk, on the contrary, holds that capital set free in the one trade is immediately employed in other trades because the larger supply of capital lowers the rate of interest and enables greater roundaboutness.

² Compare the following chapters where Engländer and Hayek's theories are more carefully examined. Purpose of these lines is to show that both theories are based on Böhm-Bawerk's line of thought.

producers' goods increases with the application of roundabout methods which depends on the available amount of savings of previous periods, and on its profitability. In his *Exkurse*, p. 11, Böhm-Bawerk maintains that in order to apply an indirect method we must distinguish whether the output of a roundabout way just covers the rate of interest or whether its profitability is nil. This is another way of saying that the height of the rate of interest ¹ determines the application of a roundabout method.² Böhm-Bawerk logically continues his line of thought. "If ever employment of goods, he holds, for future periods is, not only technically, but economically more remunerative than the employment of them for the present or near future, of course men would withdraw their stock of goods, to a great extent, from the service of the present and direct them to the more remunerative service of the future. *But this would immediately cause an ebb-tide in the provision of the present, and a flood in the provision for the future*, for the future would then have the double advantage of more productive instruments directed to its service, and those instruments in more fruitful methods of production. Thus the difference in the circumstances of provision which might have disappeared for the moment, would recur for its own amount." (Böhm-Bawerk, ii, 1, *Positive Theorie*.)

Böhm-Bawerk expresses with these words (if I interpret him correctly) that (a) the application of more roundabout methods results in a rising demand for producers' goods (future goods), and (b) that according to the application of such methods the scarcity of present means will always be maintained, and (c) that there will be a tendency towards re-establishing the old equilibrium.

¹ Compare *Exkurse*, ii, pp. 51, 51₁. Böhm-Bawerk seems to be aware that roundaboutness is determined by the rate of interest, and even of his circular reasoning, determining interest by something which is determined by interest itself.

² This should have induced Böhm-Bawerk to examine whether the rate of interest is also determined by other factors than mere estimates of value.

Hayek has developed this line of thought. The different¹ profitability of lengthening or shortening methods will have corresponding fluctuations in the trades of consumers' or producers' goods. The demand for future goods depends on the anticipated future rate of return over cost or as Keynes (i, p. 180) expresses it: "It depends on the anticipated price-level of utilities which these investments yield up at some future date, and on the rate of interest at which these future utilities are discounted for the purpose of fixing their present capital-value. Thus, whether producers of investment-goods make a profit or less, depends on whether the expectation of the market about future prices and the prevailing rate of interest are changing favourably or adversely to such producers."

Summarizing we might say that Böhm-Bawerk was aware of these shifts of commodities from their present into a future application which continually occur in the trade-cycle, and that these fluctuations are dependent on the rate of interest. He also was aware that these fluctuations will be followed by a transition from lengthening methods to shortening methods, and vice versa.² But his method of investigation, i.e. only to examine equilibrium-positions or long period phenomena, as well as his neglect of monetary phenomena which mainly occur in the short period have hindered him to give a complete theory of the trade-cycle.

Böhm-Bawerk in his *Exkurse*,³ ii, distinguishes between a transition from a lengthening method to a shortening method which has the same or a better technical result, and the transition from a lengthening method to a shortening

¹ Also Engländer's theory is based on this line of thought.

² Compare Engländer's theory of the trade-cycle. Engländer in his theory of the trade-cycle examined the different effects of a transition from lengthening to shortening methods or from a production of more stages to less stages.

³ His observations make it apparent that an invention introducing a shortening method must bring some improvement. This improvement means a reduction in cost as the time of producing is smaller and less intermediate products are required. (Compare pp. 55—55₁₃, and pp. 51, 51₁.)

method with a minor technical result. But he makes no use of these observations. He does not explain how a transition of fewer to more stages or vice versa takes place. He only considers whether a transition has taken place, and why it has taken place. It was left to his followers to interpret his work.¹

The aforesaid observations permit the conclusion that Böhm-Bawerk was aware of the process of economic development which continually takes place. The economy moves from one equilibrium into the other. The one equilibrium is determined by the fact that at the actual rate of interest savings equal investment. Between these two equilibria a period of change elapses with its two phases, the boom and the process of adjustment (depression). Böhm-Bawerk with his distinction between a transition from more to less stages with the same or better technical result, and a transition from more to less stages with a minor result indicates that in the period of boom a roundabout method of too many stages might be applied which has to be reduced to its natural basis. In other words, the standard in the period of boom cannot be maintained, and has to be adjusted to normal conditions and circumstances.²

These are the main doctrines we were able to deduce from Böhm-Bawerk's theory of interest. We did not refute entirely his doctrine, on the contrary we were able to point out where other authors could continue. But apart from his most important third ground which correctly interpreted is the main reason for the payment of interest, the other

¹ Hayek and Mises have examined the price-movements between this period of transition because such examination is the only method of an analysis of the short period.

² This enables us to point out the difference between Hayek and Böhm-Bawerk. Hayek did not make full use of Böhm-Bawerk's theory. He was not aware that the lines of development is not a continuous line as his diagram seems to indicate it. On the contrary the period of change is characterized by transitions of more to less stages and vice versa until every new investment has been adjusted to a new and stable rate of interest.

parts of his famous exchange-theory, if suitably interpreted, still serve to explain interest as Schumpeter has proved sufficiently. Before, therefore, discussing Hayek and Engländer's treatment of Böhm-Bawerk's ideas we shall give a short account of Schumpeter's theory of interest, which is important for the understanding of his theory of economic development.

CHAPTER II

SCHUMPETER'S THEORY OF INTEREST, OR BÖHM-BAWERK'S THEORY IN A MONETARY FORM

SCHUMPETER'S theory, as the title indicates, is only the monetary form of Böhm-Bawerk's famous exchange-theory. Schumpeter himself admits that he has adopted two of Böhm-Bawerk's main arguments. "The ever-changing conditions of supply and demand," he says (p. 242, *Theorie der wirtschaftl. Entwicklung*), "are the best formulation of my own theory." The insufficiency of supply or a wrong anticipation of future demand obliges us to find new methods and combinations in order to make profits. Capital is necessary to finance these aims. The third ground, he points out, is very acceptable if we interpret it to mean that interest is paid for future *investment opportunity*.¹ Böhm-Bawerk should have followed out his own idea that capital is necessary for the introduction of round-about methods. Every theory should demonstrate the correlation between interest and investment.² It is not very difficult and rather irrelevant for economic theory to explain the interest on a consumption-loan. The difficulty arises with the explanation of the connection of producers' credits and interest, that is to say of the discrepancy of

¹ We use a term of Irving Fisher, but it explains very well the meaning Schumpeter has given Böhm-Bawerk's third argument.

² It is necessary to point out that the authors of the older productivity theories tried to explain investment and investment-opportunity when they spoke of physical productivity and value-productivity or why a certain increase in goods should mean an increase in value. Their fault was to identify an increase in value with an increase in goods.

value-productivity and physical productivity,¹ a problem the solution of which can be found in the correlation of entrepreneurial gain and interest. To prove this connection, therefore, means to prove the correctness of the discussed theory of interest. It means finding the correct method of examining the correlation between investment (the increase in productivity) and entrepreneurial gain in a theory of interest. The way of solving this problem might decide the fate of such a theory. On the other hand, Schumpeter refutes Böhm-Bawerk's second ground that we discount the value of future goods. If the proposition that future goods are at present less valuable than present goods were correct, interest would be sufficiently explained. But is it correct to assume an influence of time on future valuation only if things obtain higher value with growing age because of their more valuable future application? Can we speak of a formation of value, independent of the conditions of supply and demand?

We may answer these questions in the following way. If Schumpeter considers the ever-changing conditions of demand and supply as a main proof for his theory of interest, our following deductions must be correct although we anticipate in a way Schumpeter's theory of interest. But Schumpeter had often reasoned that one produces for the market, choosing the most profitable trade. The reason is that a capitalistic enterprise produces for the attainment of monetary output. Therefore the aforesaid thesis of

¹ Examining the second ground of Böhm-Bawerk's famous 'exchange-theory, we have found that the under-endowment of the present is a result of the rate of interest. The decision to produce for more deferred periods depends on the rate of interest. The reason is that we produce for monetary output, in the expectation to make high gains in the long period. The problem which arises is whether the increased physical output will be followed by a proportionate increase in exchangeable value. In the discrepancy between physical productivity and value-productivity lies the reason for disequilibrium. It is in other words a problem whether a gain will be made at the moment the increased supply of goods appears at the market, and whether this gain will enable the payment of interest.

the prospective undervaluation of future goods must be insufficient :—

(1) The temporary discrepancy of value between present and future goods cannot only depend on psychological reasons, although they might be of some importance. In a capitalistic system where one produces for money such fluctuations must depend on fluctuations in monetary output. These fluctuations in monetary output depend on the rate of interest.

(2) Our estimates of future or present goods depend on the rate of interest. The rate of interest determines whether the production of future or present goods is more profitable. If the rate of interest is low, more future goods will be demanded because the capital destined to buy them (purchasing power) is cheap. If demand for future goods increases, the rate of interest will rise, because the purchasing power to buy them has become dearer. As Schumpeter points out the high rate of interest will be significant for the climax of economic development. Rapid investment will have taken place. The scarcity of the supply of producers' goods will make their prices rise. The profitability of producing for the future becomes smaller because the purchasing power to buy future goods has become too expensive. Entrepreneurs will withdraw and produce again the more profitable present goods. The further result is that we discount future goods. These observations indicate that if we discount future goods this is not a condition for, but the result of, the existence of interest.¹ We accordingly maintain that *movements from one trade to the other (shifts from present goods to future and vice versa) are dependent on the height of the rate of interest.* If one produces for monetary output,

¹ Dealing with Hayek's theory of the trade-cycle we shall give a better explanation of the aforesaid observations. Schumpeter, pp. 316, 317, points out that a high rate of interest is characteristic for prosperity, but, on the other hand, it is a sort of taxation on entrepreneurial gains, and may lead to stagnation.

the gain must contain two components, the entrepreneurial gain and interest. The rate of interest must determine the entrepreneurial gain, and therefore the profitability of the trade.

The above shows that interest consists in money. A theory neglecting the monetary aspect of interest does not correspond to the postulates which Böhm-Bawerk had claimed for any theory of interest. It does not explain the temporarily existing discrepancy¹ between physical and value productivity. The value of producers' goods is not always identical with the value of its products. Sometimes the value of their products is greater, sometimes smaller. The discrepancy cannot be explained by the prospective undervaluation of future goods which is only a result of the actual conditions in the market.² If there were such a thing as the superiority of value of present over future goods interest could be explained by mere physical productivity.³ Considering, nevertheless, this superiority of value only as temporarily existing, Schumpeter is nearer to the solution. Interest cannot consist in concrete goods. The explanation of interest consisted in an examination of the fluctuating monetary output of the different trades, and its connection with interest. As the monetary income of concrete goods is always varying and interest is a continuous stream of income, one necessarily seeks for the source of this continuous

¹ We have shown in the preceding chapter that a theory of interest should not only state the significance of the superiority of value of present over future goods, but also should inquire whether the increase in the physical output of production was followed by an increase in exchangeable value. The fact that present goods are more valuable than future does not imply that the future goods will yield the same value or even a surplus in value. The only correct way of stating the problem is that there will always be a discrepancy of value between present and future goods, but future goods may be sometimes more and sometimes less valuable than the present goods.

² An analysis of economic development demonstrates that this discrepancy of value is its characteristic element, and that this discrepancy is caused by the peculiar circumstances of the trade-cycle.

³ Compare Schumpeter, *Theorie der wirtschaftl. Entwicklung*, pp. 247, 245, "Means of production are only reservoirs of value, they cannot produce value"; further, p. 261, etc., and p. 273.

stream of income. It was therefore necessary to seek for the factor creating these discrepancies of value between present and future goods, but it was also necessary to explain why interest, although so deeply connected with the fluctuating monetary output of the different trades, is a continuous source of income.

Schumpeter found that this factor and source of value is *the fund of general purchasing power put at the disposal of the entrepreneur*.

The above proposition is a necessary result of Schumpeter's conception of capitalistic development. Schumpeter continues the line of thought peculiar to the Austrian School. He assumes equality of value of the means of production and their product. He, nevertheless, realizes that this equality is perpetually disturbed. Engländer considers this equality of value as a theoretical hypothesis which never corresponds to practical life. Producers' goods, he holds, can never equal their product because they are sold with the intention of obtaining monetary output.¹ Schumpeter's view upon this subject is the following. For the sake of economic analysis it is better to assume a state without change at which there is equality of value between means of production (cost) and their products. In such a state land and labour must have an equal share of the value of the product (an argument put forward also by Böhm-Bawerk and v. Wieser). No gain could be made either with the final or with the intermediate product, because the value of the intermediate product is equal to the value of its products. Every product, even every intermediate product, can be carried back to the productive services of land and labour. The same price should, therefore, be paid for the intermediate product as well as for the final product, and the owners of the original means of production

¹ Compare Engländer's criticism of C. Menger in the *Handb. d. Staatsw.* and his lecture held in the economic society in Dresden. Compare also the similar opinions of v. Philipovich and v. Komorzynski.

(land and labour) should enjoy all the income derived from the production of these products. Therefore no production would yield an extra-profit and only rents due to scarcity or different fertility would be earned. This picture of a state without development enables us to have a better understanding of the function of capital. As in a state without development all producers' goods are the property of some enterprise, the pioneers of new ideas (innovations) have to provide themselves with the necessary goods in order to carry them through. The gain made by entrepreneurs when in possession of these goods is the entrepreneurial gain. The function of capital is to help the entrepreneur to carry through his innovations, by providing him with the necessary purchasing power to buy them. (Böhm-Bawerk has expressed a similar idea without making full use of it. Capital, he says, is necessary for the introduction of new roundabout methods.) On the other hand, there are entrepreneurs possessing already the necessary means of production. They do not earn interest. The entrepreneurial gain is their recompense.¹ If interest

¹ In a non-capitalistic system, according to Schumpeter, interest does not exist. Division of labour, roundabout methods, private property, and a production for the market are the supposition for the existence of interest. It follows that in a communistic state interest cannot exist because the means of production are already at the disposal of those who regulate the stream of economic development. Interest is only paid in a system where goods are at the disposal of others who are not interested in the innovations of the entrepreneur. The entrepreneur has to be provided with the necessary means of production. There are two possibilities: (a) the means of production are in the hands of others, (b) the means of production do not exist. The function of capital accordingly is twofold: (1) it endows the entrepreneur to overbid the others and bring them into his possession, (2) it creates new means of production by forcing other people into involuntary saving. These problems do not arise in a barter-economy nor in a static economy where everybody possesses the necessary means of production, and where changes in methods of production do not affect the others because no competition forces other people to withdraw or to adopt the new method, or to bid for the necessary means of production. Interest, therefore, is only characteristic for a money-economy where continuous development takes place if we disregard that interest is paid for consumption-loans. Consumption-loans have no economic importance if they are not granted in great quantities, and to a whole class of people. Compare Schumpeter, pp. 264 ff., *Theorie der Wirtschaftl. Entw.*

enters in their calculation they only consider the successfulness of their enterprise. If the entrepreneurial gain were below the rate of interest, it would not be worth while to continue their production ; the purchasing power embodied in their property could be better utilized by selling it.¹ An entrepreneur will have to decide this question if the competition in his trade becomes too great. The growing competition is the result of a successful innovation. If one pioneer has successfully carried through his new ideas and has made high entrepreneurial gains, his success will induce other entrepreneurs to follow.² The appearance of so many entrepreneurs will cause these high gains to diminish. The fact that the stream of entrepreneurial gains is drying up is the explanation for the only temporarily existing discrepancy of value of the means of production and their products. The most important conclusions from Schumpeter's observations are :—

- (1) That interest does not consist in concrete goods,
- (2) that interest derives from this temporarily existing discrepancy of value between the means of production and their product—in other words from the entrepreneurial gain, and
- (3) That interest is paid for the capital necessary to enable the entrepreneur to provide himself with the means of production which he needs for the introduction of his innovations.

On these principles Schumpeter has built up his theory of interest. He was aware of the connection between the rate of interest and the money-market and had realized that the demand for money was produced by the desire for new investments. As purchasing power is necessary for the

¹ The fact that entrepreneurs are using their own capital, that is to say their own purchasing power accumulated from previous gains has often resulted in misunderstandings. Many theorists treated the whole output of production as interest instead of treating it as a separate element.

² Schumpeter uses this idea for the explanation of the trade-cycle.

introduction of entrepreneurial innovations and purchasing power can only be represented by money (or currencies), interest accordingly could only consist in money and had to be considered as the price of a money-loan.¹ Why does, therefore, present purchasing power, necessary for the introduction of innovations, obtain an excess-value over future or why do we pay interest for present purchasing power?

Schumpeter gives the following explanation. In a state where no development takes place, interest will be paid for consumption-loans. But in this case interest would be determined by the psychological estimates of lender and debtor. The payment of interest, nevertheless, would be of no importance for the economic world. It would cause no disturbances because interest would only be the income of bankers who would enable the transactions between those who prefer present money to future and vice versa.² Capitalistic development has brought another function for capital. It enables the entrepreneur to buy present means of production and to employ them for new combinations and methods (innovations) which produce a more valuable product, mostly due to a reduction in costs. As the prices of producers' goods at the moment of the introduction of a new combination or method are valued with regard to the old application, the entrepreneur buying them must gain an excess-value. To make it more clear the prices of the producers' goods remain constant until competition causes them to rise. This reasoning explains why present sums of money or purchasing power obtain a price. They enable

¹ We have pointed out that the entrepreneur requires present purchasing power to buy the means for his future prosperity which consists in his future entrepreneurial gains. These gains are the fund of which interest is paid and future capital (purchasing power) is reproduced.

² Interest would be a mere premium for risk as Galiani has shown. At his time the capitalistic system was just developing, and loans to entrepreneurs unusual (compare Böhm-Bawerk, i, on Galiani's theory, pp. 56 ff., and compare also Schumpeter, p. 316).

the attainment of greater sums of money in the future. Therefore we can say that interest is an exchange of present purchasing power for future purchasing power, determined by the competition between entrepreneurs and capitalists. The demand-side is represented by the entrepreneurs who plan on introducing their innovations. The supply-side, is represented by the capitalist, that is to say any person who puts purchasing sums of money at the disposal of the entrepreneur by confining either his own production or consumption. The price-willingness¹ of the capitalist will depend on whether the future increase in utility will exceed the greatness of his sacrifice. The price-willingness of the entrepreneur will depend on the future rate of return over cost. According to the Austrian law of price-formation the price of present purchasing power is determined by the last entrepreneur whose estimates are decisive for the exchange of the whole lot of offered purchasing power, and the last capitalist who just finds the exchange of his purchasing power worth while. The last entrepreneur whose estimates just enable the exchange lies between two classes of entrepreneurs, those who still make a gain, and those who are excluded because their earnings would be below the rate of interest. The last or marginal entrepreneur is the entrepreneur whose earnings just cover the rate of interest. We can also speak of the marginal gain of the entrepreneur or the marginal rate of return over cost as being decisive for the demand for present purchasing power. The supply-side is determined by the marginal increase in utility, which just makes the greatness of the sacrifice of the capitalist worth while.² Interest is therefore the product of the estimates of the marginal entrepreneur and the marginal capitalist.

¹ Compare also O. Engländer, who speaks of the *Opferzahl*, etc., ii Teil.

² Compare the theorists who see in abstinence or waiting the reason for the existence and payment of interest. The bearing of their theories has only this possible interpretation.

Until now we have spoken only of a development financed by means which were already existing, such as the entrepreneurial gain, savings, accessory gains, etc. In a more developed capitalistic system development is financed with the aid of additional credits. The banker creates new purchasing power (for example from deposits) by transforming deposits into additional credits. He does not intend to abstain from the use of cash-money; but he intends to increase the present amount of general purchasing power.

The problem, therefore,¹ which had to be decided by Schumpeter was whether interest can be zero or negative, in other words whether the newly-created purchasing power corresponds to actual demand. The demand for purchasing power differs in an important way from the demand for concrete goods. The demand for concrete goods is only effective if it can be supported by the present supply of goods. The demand for purchasing power has no such limitation, but the creation of purchasing power must be justified by future entrepreneurial gains.

Only if the entrepreneur can make a gain will he demand the purchasing power which is necessary for the introduction of his innovations. But the number of possible and profitable innovations is very great. Böhm-Bawerk has already pointed to this fact. No economic system is so perfect that further improvement is impossible. The great number of non-utilized roundabout methods is a sufficient reason for the continuous payment of interest. "The demand for capital," Schumpeter (p. 298) adds to this statement, "will increase, due to the fact that a successful entrepreneur induces many others to follow. The competition will cause," he continues, "fluctuations of the rate of interest, until interest will settle down at a new rate which will permit entrepreneurs to make gains."

¹ Compare Schumpeter, pp. 295 ff. A short summary of pp. 298 and 299 (in inverted commas) follows.

Schumpeter's theory of interest is an important part of his theory of economic development. It is logically consistent with his theory of capital and the productive credit. Capital is to buy the means necessary to start new investment, and interest is the price of this capital. It will remain a continuous stream of income as long as economic progress is further possible, in other words as long as present purchasing power is more valuable than future. Present purchasing power is more valuable than future, because one can buy with present purchasing power goods, the product of which enables one to make future gains. The correlation between present purchasing power and entrepreneurial gains is the explanation of the phenomenon interest. The rate of interest fluctuates with the possibility of such gains but, as Schumpeter and Böhm-Bawerk have pointed out, the rate will never be negative because of the great number of possible innovations and roundabout methods.¹ The fault of older theories was the treatment of interest merely as an increase in the physical output of production and in considering it identical with an increase in value without neglecting to treat this increase in value as a separate element of their consideration. Schumpeter has clarified their idea by examining the true correlation of value-productivity and physical productivity. Interest must be considered from the point of view of the entrepreneurial gain. Any increase in physical output must not mean an increase in exchangeable value. If production yields a gain, this gain must not necessarily be interest. The gain may be smaller than the rate of interest and the gain may be greater than interest. We must be aware that interest is not synonymous with any output of production. It is therefore wrong to speak of real interest.² The problem of interest can only be understood

¹ The dynamic character of interest is the cause of its existence.

² Real or natural interest as conceived by Fisher and by Böhm-Bawerk is different from the Wicksellian definition. Böhm-Bawerk and Fisher mean by natural interest the whole increment of production, whilst Wicksell

from the particular *function of capital* in a *capitalistic system*. The fault committed by previous theory consisted in considering the whole physical output of production as interest and in trying to find a corresponding increase in value. Interest is characteristic for a credit-economy, and paid in the expectation of future gains ; it is not synonymous with any increase in exchangeable value, as from the increase in exchangeable value we repay the capitalist. Interest is a sort of taxation of the entrepreneurial gain.

Schumpeter's theory is based on Böhm-Bawerk's theory of interest. It adjusts two arguments of Böhm-Bawerk to its purposes : the ever-changing conditions of supply and demand which yield a better understanding of the varying profitability of different trades and its connection with interest, and the introduction of new roundabout methods. As according to Böhm-Bawerk's third ground there will be a continuous possibility of roundabout methods,¹ the supply of present purchasing power will always be scarce and therefore obtain an agio on future purchasing power.

Schumpeter's theory, finally, fulfils all requirements which Böhm-Bawerk has claimed for the correctness of a theory of interest :—

(1) It explains why interest is a continuous income in spite of the fact that interest derives from the temporarily existing discrepancy between cost of production and the products thereof. It hence solves the question after the existence of interest.

(2) It indicates the solution of the problem of the discrepancy between value-productivity and physical productivity.

means the rate of interest which restricted the demand for real capital to the amount of savings available. (Compare Haberler, *E.J.*, 1934, and Hayek's *Prices and Production*.)

¹ Innovations are nothing but new roundabout methods or a new and different combination of the productive services of land and labour.

The rate of interest can be considered as a sort of taxation of the entrepreneurial gain. If the competition of too many entrepreneurs causes the rate of interest to rise, some inventions or roundabout methods become less profitable or lose entirely their profitability. The further connection between shifts of demand from producers' goods to consumers' goods (the prospective undervaluation of future goods) and vice versa will have to be analysed whilst dealing with Hayek's theory of the trade-cycle. We deduced some such theory from Schumpeter's theory of interest to show why he was unable to accept Böhm-Bawerk's second ground and Irving Fisher's solution of the problem of interest.

Schumpeter's theory of interest is a theory of the trade-cycle. It shows the connection between "profits" and interest, and their place in economic development.

CHAPTER III

THEORIES OF THE TRADE-CYCLE COMBINING MONETARY CHANGES AND CHANGES IN THE STRUCTURE OF PRODUCTION

THE authors with whom we are dealing now have it in common that they all rely on Böhm-Bawerk's picture of the productive process, and that they all examine the monetary aspect of the trade-cycle from the point of view of relative prices of commodities. These authors have realized the necessity of an examination of the connection between money and prices. The problem which they had to decide consisted of the question whether a change in the volume of production was due to a change in the price-level, and whether one should investigate "the effect of such a change upon the volume of production in general, or upon particular branches of production".¹ It soon became apparent to those economists that the study of changes in the prices of mechanism was the only method of an investigation of dynamic changes. Cantillon² already, as Hayek shows, points out that an increase in the supply of precious metals (money as we could say) does not affect all trades and incomes simultaneously and that by this increase of additional money "those persons were benefited whose incomes rise early, while to persons whose incomes rise later the increase of the quantity of money was harmful",

¹ Compare Hayek, *Prices and Production*, and Engländer in *Preise und Konjunktur*, especially p. 9.

² Vide Mises in an article in *Der Neuenfreien Presse*, 1932, has adopted similar arguments. Discussing inflationary tendencies he emphasizes the fact that all trades cannot be simultaneously affected and that any increase in additional money will create conjuncture gains only for some trades.

and a statement of Hume expresses the same view. "It is only in this interval of intermediate situation between the acquisition of money and the rise of prices that the increasing quantity' of gold (i.e. money) is favourable for industry. These authors express in other words the modern view that money influences "individual prices" and that this price-fluctuation influences the structure of production until the economic system has adjusted itself to the increase in purchasing power (money).

Disturbances of the old equilibrium can only arise from the monetary side. Therefore an examination of the effects of a credit-expansion on the structure of production and a study of relative prices of commodities because of their prompt reaction on changes in the structure of production is necessary for every modern theorist.¹

Engländer and Hayek as well as v. Mises consider a transition from more to less stages and vice versa as a change in the structure of production. These authors, as I have mentioned, continue a line of thought familiar to the Austrian School, especially to Böhm-Bawerk.² Hayek (*Prices and Production*, pp. 34, 35) has nearly verbally quoted Böhm-Bawerk's concept of capitalistic production. "I have already pointed out," he says, "that it is an essential feature of our modern 'capitalistic' system of production that at any moment a far larger proportion of the available

¹ v. Wieser first had pointed out that relative prices of commodities give an adequate picture of dynamic changes. In the short period, he says, only the money-prices of commodities change whilst the purchasing power of money seems to have remained unchanged. Money-prices react on dynamic changes instantly, because the total sum of money-incomes is decisive for the determination of a single price. Any movement of a single price, therefore, necessitates a corresponding movement of all other prices. (Compare v. Wieser *Der Geldwert und seine Geschichtl. Veränderungen Sammlung Hayek*, pp. 174, 175, 176-7, 181-2; *Der Geldwert und seine Veränderungen*, pp. 195-9.)

² Menger first stated that capitalistic production was characterized by the amount of goods of higher order. Realizing that productivity was increasing with the amount of these goods he included them in his notion of capital.

original means of production is employed to provide consumers' goods for some more or less distant future than is used for the satisfaction of immediate needs. The *raison d'être* of this way of organizing production is, of course, that by lengthening the production process we are able to obtain a greater quantity of consumer's goods out of a given quantity of original means of production." It is at this moment futile to discuss whether every roundabout method will be profitable and will yield physical output. It is simpler to state, as Hayek does, that within practical limits we may increase the output of consumers' goods from a given quantity of original means of production (land and labour) indefinitely, provided we are willing to wait long enough for the production. Böhm-Bawerk, arguing with Irving Fisher, has pointed out that the choice between a lengthening method and shortening method depends on good selection which will always be determined by the actual rate of interest.¹ A transition of production from more to less stages and vice versa means a change in the structure of production. The questions now to decide were why do such changes occur, and how are they connected with monetary changes. Wicksell's² theory is an important

¹ Many authors, like Martin Hill, *E. J.*, Dec., 1934, have assumed that Böhm-Bawerk did only distinguish between more or less productive roundabout methods without examining the factor which determines their fluctuating productivity. Böhm-Bawerk, on the contrary, has pointed out that the productivity of a roundabout method may be measured from either of two limits, that is to say we have to examine whether the output covers the rate of interest or whether it is nil. (Compare *Exkurse*, i, p. 11.)

² Compare Böhm-Bawerk, *Positive Theorie*, pp. 178, 149 ff., *Exkurse*, p. 7, etc. The following short account of Böhm-Bawerk's theory is supposed to show the connection between Böhm-Bawerk's line of thought and those who have further completed it. Wicksell continues a line of thought already initiated by Böhm-Bawerk. Böhm-Bawerk considering capitalistic production remarks that the introduction of roundabout methods will depend on the amount of savings of previous periods or in other words whether present or future goods are preferred. In a capitalistic system Böhm-Bawerk holds the entire production is regulated by the consumer. If a population could consume all its income, such great demand for consumers' goods would induce the entrepreneurs to transform all productive forces which are at their disposal into consumers' goods. If no savings are made, therefore, prices of consumers' goods will rise. If savings are made there is

answer to these questions. The Wicksellian theory of the influence of monetary changes on price-formation is the following: he distinguishes between a money-rate of interest and a natural rate of interest; in a money economy the demand for capital-goods is expressed in money and capital-goods, therefore, are not credited in their natural form, but in the form of money, the quantity of which available for capital purposes may be arbitrarily changed by the banks. The natural rate is the rate which is determined by supply and demand if the capital-goods are exchanged in their natural form without the aid of money. If any commodity is offered at a price which does not correspond to the subjective estimates at the market the subjective estimates will soon bring about the necessary correction. Changes in the general price-level nevertheless cannot be brought to their natural basis by the particular circumstances of the market. The factor regulating changes in the price-level is the correlation between the money-rate and the natural rate. Wicksell deduces two statements from these facts:—

(1) There will be no change in the general price-level if both rates coincide. “If the money¹ rate coincides with the equilibrium rate, the rate of interest remains ‘neutral’ in its effects on the prices of goods, tending neither to raise

greater demand for producers’ goods as some entrepreneurs employ the productive forces at their disposal for future purposes. Prices of producers’ goods will rise consequently, and more and more roundabout methods will be applied. Obviously Wicksell and v. Mises have based their theories on this line of thought. According to these authors the equilibrium-rate of interest was a rate which restricted the demand for real capital to the amount of savings available.

¹ Hayek, p. 21, *Prices and Production*. The expression equilibrium rate derives from Hayek; Wicksell calls it the natural rate of interest. Hayek objects to this theory that an equilibrium rate of interest does not imply a stable price-level. It only implies that monetary phenomena cannot influence the trade-cycle. As the decline of the money rate below the natural rate causes prices to rise and a rise of the money-rate above the natural rate causes prices to fall, money remains neutral relatively to goods if both rates are in equilibrium position.

nor to lower them. The idea is that at an equilibrium rate of interest money would remain neutral towards prices and that in such circumstances there would be no reason for a change in the price-level.

(2) When the banks, however, lower the money rate below the natural rate, prices tend to rise and vice versa. The progressive rise in prices will induce the banks to raise the rate of interest. The rise in prices, nevertheless, can be no reason for raising the rate of interest again as Wicksell's hypothetical bank is not restricted in the issuing of currencies. The reason must be a different one, and v. Mises has furnished the explanation of this problem. He has further advanced the Wicksellian theory by analysing the influence of the rate of interest on consumers' goods on the one hand, and producers' goods on the other.¹

§ 1

v. Mises's Theory of the Trade-cycle

v. Mises's theory of the trade-cycle is disguised under the name of a theory of the inner objective exchangeable value of money.²

v. Mises has particularly examined the influence of monetary changes on prices and the role which the fund of subsistence plays in our economic system. His theory refutes Wicksell's proposition that the bank-rate which has been artificially brought down by an increase in additional money has to be raised again because of the rise in the price-level. The reason is a different one, and v. Mises has with

¹ Compare Hayek, *Prices and Production*, p. 22; v. Mises, *Theorie des Geldes und der Umlaufsmittel*, pp. 98, 304, 305; Wicksell, *Geldzins und Güterpreise*, pp. iv, v ff., 16 ff., 104 ff., 111.

² Hayek has based his theory of the trade-cycle on v. Mises's theory of fluctuations in monetary value and his doctrine can only be understood from the contents of the latter's theory. Instead of v. Mises's rather clumsy expression we intend to use the term "purchasing power of money" which is more commonly used.

his examination of the function of the fund of subsistence given the correct explanation of this phenomenon. An artificial lowering of the rate of interest, he holds, influences the investment-activity of a country. To demonstrate this influence v. Mises uses Böhm-Bawerk's picture of changes in the structure of production. The result of a fall in the rate of interest is, according to Böhm-Bawerk, an increase in the investment-activity of a country, that is to say a fall in the rate of interest will be followed by an increase in the length of the productive process and of the capital used. The function of the fund of subsistence (which determines the height of the rate of interest) is (1) that of selecting the more profitable from the less profitable roundabout methods, and (2) that of determining whether an increase in the length of the productive process is economically permissible. The fund of subsistence¹ should be the measure of the credit-supply of the banking-system. The banking-system, however, had adopted a policy of forced saving. He nevertheless does not seem to refute entirely a credit supply of forced saving. It rather seems to me that he considers it as the only method to bring about a change of the old equilibrium because according to his statements² only changes in monetary value influence the structure of production. v. Mises, however, realizes that development does not run smoothly, and that disturbances will occur until finally a new equilibrium will emerge. An examination of the function of the fund of subsistence was therefore necessary as with a better knowledge of the evil of this credit-supply we might be able to mitigate it; but an

¹ As the fund of subsistence we have to understand the general supply of capital-goods and consumption goods. This interpretation is of importance to the understanding of v. Mises's theory.

² v. Mises seems to hesitate whether inflationary tendencies are unwholesome for the economic system. He seems to refute such policies but, although against inflationary tendencies, he advocates no policy of avoiding them. He seems to content himself to show the effects of such a credit-supply on the structure of production and the price-level.

investigation of changes in monetary value and their effects on our price-system was equally necessary to demonstrate how economic development is brought about.

The study of the character of changes in monetary value consists (1) in an examination of the monetary factors determining the ratio of exchange between money and commodity-prices, and (2) in an examination of those factors operating on the side of commodities. v. Mises's method of examining economic changes follows v. Wieser's example. v. Wieser had suggested that the object of any examination of economic changes should be :—

(a) how changes in money-incomes are brought about, and

(b) the influence of changes in money-incomes on changes in real incomes.

Such an investigation would have shown that an increase in additional money initiates a change in the price-mechanism and that this change alters money-incomes which is the presupposition of a transition from one equilibrium into the other.

v. Mises's criticism of the quantity-theory, a theory applying the old law of supply and demand to determine the inner objective ¹ value of money accordingly demonstrates how an increase in additional money alters the money incomes of the consumer, and so creates the conditions for a change from one equilibrium into the other. The failure of the old quantity-theory consisted in its incapacity to explain the determination of the value of money. It could only indicate the possible direction of the movement of monetary value. Therefore we must interpret the statement that the inner objective exchangeable value of money is in indirect proportion to the increase in the quantity of

¹ v. Mises's theory applies to "Sachgeld" as well as to "zusätzliches Geld". One fault of the quantity-theory was the neglect of the effects of "additional money".

money, in a narrower sense. The quantity-theory does not explain the mechanism of changes in monetary value, that is to say how after an increase in money relative prices of commodities are adjusted to each other until a new equilibrium is established. The quantity-theory merely states that there is a connection between changes in money-supply and money-demand and changes in monetary value. It incorrectly assumes that the demand for money is determined by the amount of commodities to be sold in a certain period of time, and on the other hand by the circuit-velocity of money.¹ We cannot, v. Mises holds, use the money-demand (*Geldbedarf*) of all economies as the starting point for our investigation. The money-demand of the entire economic system is composed by the money-demand² of every individual. As the above formula does not describe the money-demand of the individual, an examination of the conditions determining the money-demand of the individual is necessary. The actions of the individual will be determined by the marginal utility of the money-fund at his disposal. He will increase his offer for other commodities if his money-fund is large. He will abstain from buying them if his money-fund is small. There is little doubt that he will spend more if his money-fund has been increased. The problem is whether he will use this fund for

¹ Compare Irving Fisher's famous formula $PT = MV$; compare Keynes, i, p. 234 ff., $P_2.T = M.V.$; T = Volume of trade, P_1 = the price-level of the articles traded, the price of each individual article traded being weighted in proportion to the money-volumes of the transactions in that article. $M.V.$ = the volume of bank clearings, M = the volume of deposits. Fisher's formula $PT = MV$ was improved in this sense by Keynes, who means the cash-transaction standard. Fisher formulated the principles of the quantity-theory mathematically. The mathematical formulation is more familiar to English readers. v. Mises, in his examination of relative prices of commodities, has pointed out how far this formula is reliable. He has especially pointed out that a change in the money-supply will bring about changes in the price-mechanism and in real incomes. The question will be of importance later, whether a change in the money-supply which is due to saving will have the same effects or whether it will remain neutral towards the relative values of goods.

² v. Mises includes currencies in his concept of money although he treats them separately, compare pp. 113 and 114.

consumption or production.¹ An investigation of an individual's actions therefore is necessary if changes occur disturbing the equilibrium between money-supply and money-demand. Such changes can only have an effect if they influence the subjective estimates of a considerable number of individuals. An increase or decrease in the available quantity of money has the aforesaid effect provided that the money-demand has remained constant or has not risen in the same proportion. An increase in the available amount of money is followed by an increase of all money-incomes ; but they do not increase at the same time nor to the same extent. Certain classes benefit to a greater extent by an increase in additional money. In proportion to their greater money spending power they express a greater demand for those commodities they intend to acquire. The prices of such goods begin to rise and the entrepreneurs in these trades make greater profits which increase their money-incomes in their turn. Their greater money spending power ² is expressed by a greater demand for those commodities they wish to acquire, the prices of which begin to rise consequently. This is the mechanism of an increase in money-incomes, which nevertheless will not be general. The reason why not every individual will participate in the increase in money-incomes is the following : any increase in money is followed by an increase in the price-level, and the purchasing power of money decreases as prices rise. The individuals, therefore, which the increase in money-income reaches very late will have the purchasing power of their money-incomes diminished

¹ See Schumpeter on this subject. Any person uses his capital for production provided that he puts it at the disposal of those who use it in production. The problem of the trade-cycle consists whether loans will be used for consumption or production. Compare v. Mises, pp. 114, 115 ff., and first edition, pp. 146 ff., further pp. 118-19, 120-1.

² We use this term, although v. Mises seems more inclined to speak of the marginal utility of the money-fund which is at a person's disposal. In a criticism of Wicksell, pp. 98 ff., he claims that the principle of marginal utility can easily be used for these purposes.

although they have risen nominally. There will be a tendency ¹ on the side of these people to work against this diminution of the purchasing power which nevertheless will not counterbalance the increase in the money-incomes of the others for the following reasons: the greater money spending power ² (which is due to an increase in money) will induce those people who benefit first by the additional money to buy more commodities. The result, as we have seen, is a rise in the price-level and a diminution of purchasing power. The rise in the price-level cannot be general as those who dispose of more money will only demand the particular commodities they want, and because of the difference of their subjective estimates only prices of some commodities will rise, while others remain unchanged or will fall. Those who benefit by the rise in prices will make a gain as they can still buy the other commodities at their lower prices. But some classes will lose as the increase in money-incomes has reached them at a time when the purchasing power of money has already diminished. Thus the diminution of purchasing power does not affect all commodities and all classes of buyers equally.³ The doctrine of the quantity-theory consequently is not consistent with the real facts. The increase in money is not followed by a proportionate decrease in purchasing power for all classes of buyers. On the other hand, v. Mises concludes, the quantity-theory does not make allowance for economic development. The

¹ This tendency is rather counterbalanced by an increase in productivity which again raises the diminishing money-spending power of the consumer.

² We use this term, although v. Mises seems more inclined to speak of the marginal utility of the money-fund which is at a person's disposal. In a criticism of Wicksell, pp. 98 ff., he claims that the principle of marginal utility can easily be used for these purposes.

³ If the quantity-theory would be appropriate there would be no need for the use of money. Currencies could take the place of money, and the clearing houses could compensate these obligations against each other. Full compensation, nevertheless, is impossible even in a static state, because all individuals as we have seen do not spend their money equally or simultaneously (pp. 302 and 408).

principles of the quantity-theory are appropriate in a static state, but the followers of the quantity-theory disregard *the dynamic influence*¹ of an increase in additional money. The new equilibrium cannot be equal to the equilibrium which existed before the issue of additional money as the decrease in purchasing power cannot be equal for all commodities. An increase in additional money will increase the demand for some commodities and will decrease it for others. In some trades, therefore, more commodities will be produced, in other trades the expansion in these other trades has to be met by a curtailment of their own production. These lines suggest that v. Mises has a change in the structure of production in mind which is brought about by the issue of additional money. Thus our view is the more appropriate as v. Mises himself mentions the fact that the money demand rises in the period of development. Although the money demand (Geldbedarf) rises, there is no increase in the purchasing power of money. The reason, as v. Mises maintains, is the increase in additional money which is characteristic for every period of development.

v. Mises's criticism of the old quantity-theory indicates that v. Mises advocates a policy of credit-inflation. He seems to realize that any increase in additional money alters money-incomes and real incomes² and so bring about a change in the old equilibrium. v. Mises, however, is against any credit-inflation. He admits that any credit-expansion will be followed by an increase in investment activity and more goods will be produced. But he realizes that this increase in physical productivity should be followed by a similar increase in exchangeable value. As the credit-supply of the banking system causes sooner or later a dis-

¹ Compare pp. 121-8, 2nd edition, with pp. 149-159, 1st edition. v. Mises has added his interesting views about dynamic influences of additional money in the later editions. This explains his different and inconsistent views about the credit-supply of the banking system (see the following page).

² v. Mises' theory of forced saving will be more fully discussed later.

proportion ¹ between the increase in goods and the increase in value, v. Mises is against any inflationary tendencies. He nevertheless does not indicate a remedy for this dilemma. On the contrary he describes how the change in real incomes allows that the new equilibrium brought about by the dynamic influences of additional money can be partly maintained. The credit-supply of the banking system forces people into involuntary saving, and v. Mises accordingly advocates a policy of forced saving.² The demand for money, he holds, is more or less a demand for capital-goods and money serves to acquire them at the market. It is the job of the banker to provide the entrepreneur with the necessary capital. The way of fulfilling this task is credit-creation. The banker satisfies this entrepreneurial demand by creating new currencies. The question of the source from which the entrepreneur acquires the capital-goods needed for his production is answered by v. Mises in the following way.³ "If currencies yield the same services as money itself,³ and consequently increase the stock of existing money, it is obvious that the issue of currencies must influence the ratio of exchange between money and the other economic goods. The burden of providing the capital-goods for the receivers of the aforesaid-loans is borne by those who suffer loss by any change in the purchasing power (inner objective exchangeable value) of money. (Die Kosten der Kapitalsbeschaffung für die Empfänger der in Umlaufsmitteln gewährten Darlehen tragen alle jene, welche durch die eintretenden Veränderungen des inneren objekt. Tauschwertes des Geldes geschädigt werden " (p. 320).)

¹ The cause of this disproportion, as v. Mises explains later, is that the fund of subsistence has not increased in proportion to the increase in investment, but is the missing increase in value which causes the downfall of the upward movement.

² Compare also Hayek, *Monetary Theory and Trade-cycle*, pp. 124, 128, 130, 134, 153-4, etc., where Hayek maintains that v. Mises advocates a theory of forced saving.

³ One can use a title for money just as money itself.

Entrepreneurs and those who issue the loans share the gain made by this transaction. v. Mises, nevertheless, does not come to the final conclusions we can derive from these observations. He does not entirely overlook ¹ the increase in productivity which follows any credit-expansion; he, however, inclines to intensify too much the evil of an increase in additional money. An increase in productivity ² counterbalances the losses of those who have to bear the burden of providing the necessary capital; but as a further result it also causes a diminution of the gains made by the who benefited first by the credit-expansion.

v. Mises himself described the results of an increase in productivity by examining the reaction of producers' goods and consumers' goods on an increase in additional money. The subject of his investigation was until now only the influence of additional money on the prices of consumers' goods, but v. Mises has also examined monetary influences on the prices of producers' goods. Those, he says, will suffer from a credit-expansion (diminution of purchasing power) who could not raise their prices before the decrease in purchasing power was general. Those will make a gain who were able to raise prices whilst the prices of the commodities they buy were still low. Those on the other hand will suffer from a credit-contraction (a rise in the purchasing power of money) who have to lower prices whilst the prices of commodities they buy are still high. Those, again, will make a gain if the prices of the commodities which they buy remain constant or rise whilst prices of other commodities begun to fall.

¹ v. Mises sometimes seems to be aware of the increase in productivity which takes place. p. 361 says that the question depends upon whether the circumstances altered by any credit-expansion will remain or whether they will readjust themselves to the old equilibrium-rate of interest. He altogether admits that there is a possibility of a new equilibrium-rate because of the increase in the fund of subsistence which follows any progressive, increase of money-incomes. Compare pp. 131-3, 2nd edition, and also p. 361.

² Compare Schumpeter's similar views, pp. 158-9, 148, 156, 156₁₈, especially p. 165₁₈.

The above explains how rising or diminishing purchasing power influences the relation between debtor and creditor. Rising purchasing power causes losses on the side of the debtor, diminishing purchasing power, losses on the side of the creditor. If at any increase of additional money the creditor would lose, the question arises why do creditors grant loans, the benefit of which goes at any rate to the debtor? It is unbelievable that loans would be further granted in a system where anybody is trying to obtain greatest output, *unless there is some possibility of a recompense*.¹ The study of economic development teaches that additional money may sometimes work to the advantage of the creditor, sometimes to the debtor. The reason is that the fluctuation in the "inner objective exchangeable value" of money not entirely depends on changes in the supply of money, but equally on changes on the side of goods. The creditor, as Schumpeter has explained, hopes to be compensated for lending his money not only by the payment of the debt plus interest, but also by an increase in goods.²

The above examination of fluctuations of the purchasing power of money and its effects on the correlation between creditor and debtor should have convinced v. Mises therefore that his assumptions of the unwholesome results of an increase in money are wrong. He nevertheless is again very near to the—in my opinion—correct solution. His observations have induced him to examine the degree of monetary influences on the structure of production. The question is,

¹ The diminution of the purchasing power of money was considered as characteristic for economic development. (Compare v. Wieser, *Über die Ursache der stetig wachsenden Teuerung in „der Geldwert und seine geschichtl. Veränderungen“ und „der Geldwert und seine Veränderungen“*, p. 57 resp. p. 527 ff., and *Theorie der gesellschaftl. Wirtschaft*, p. 327 ff., Schumpeter, and v. Mises pp. 139 ff., also pp. 132, 195 ff., 192.

² v. Mises himself points out that any banking system should regard the change in the purchasing power of money when striking a balance. Compare pp. 187–8. He seems to admit, therefore, that changes in monetary value bring about changes in the structure of production. The banking system, however, should measure how much the decrease in monetary value was counterbalanced by an increase in productivity.

he holds, whether changes in the quantity of additional money, which influence the connection between monetary changes and prices of consumers' goods, influence producers' goods in a different way. The further question is whether the central banks are able to influence the height of the rate of interest by their credit-policy, and whether they can lower the rate of interest to the extent of their own costs. v. Mises maintains that this is impossible : any loan is an exchange of present for future goods.¹ Although capital goods derive their value from their products, the value of capital-goods is always smaller than the value of their products. The reason is the natural difference of value between present and future goods in which the rate of interest is hidden. Any credit-supply of a country has to be adjusted itself to the equilibrium-rate of exchange between present and future goods. Although the banking-system can lower the money-rate of interest, it is unable to check its readjustment to the natural level completely. v. Mises explains the results of a credit-expansion in the following way. The demand for capital-goods is a demand for money, as in a system of indirect exchange anything can be bought by money. It was, therefore, often assumed that scarcity of money means a scarcity in capital-goods, an excess of money, an excess in capital-goods. The only truth in this assumption is that an increase or decrease in additional money means a change in the natural rate of interest. A new equilibrium-rate of interest can only be brought about by a change in the fund of subsistence, that is to say by a change of the amount of goods, destined for productive purposes. Whether or not an increase in additional money can influence the natural rate of interest depends upon the application of this additional money. It depends on whether they are applied to buy producers' goods and so serve the formation of capital (means of production), or consumers'

¹ Böhm-Bawerk's line of thought was adopted by v. Mises.

goods without influencing the formation of capital. As we have seen before an increase in additional money increases the money-incomes of different classes of people in a different proportion. The classes who gain by an increase in additional money can use their increased money-fund for capital-formation at the expense of those who necessarily lose by a credit-expansion.

And also another fact is favourable to the formation of capital, v. Mises holds that the formation of greater money-incomes influences the valuation of present and future goods. Böhm-Bawerk and Irving Fisher¹ thought that greater money-incomes enable their owners to provide in a better way for the future than owners of small money-incomes do. They increase their savings and so add to the national fund of subsistence. The national fund of subsistence is again relevant for the height of the natural rate of interest. The greater the fund of subsistence, the lower the rate of interest, and vice versa. It is, nevertheless, unbelievable that there would be no rate of exchange between present and future goods because this would mean that all goods have ceased to be economic goods, and that the fund of subsistence would satisfy all requirements of the present and of the future.

It may, therefore, be deducted that v. Mises proposes an adjustment of the credit-supply of the banking system to the subjective estimates of the consumer. According to the above observations it seems possible that the Central Banks can lower the money-rate of interest to a certain extent and that the only limitation is the fund of subsistence. After this margin has been reached, a further lowering of the rate is impossible. It therefore follows that the rate can only be lowered if the fund of subsistence can be increased. The rate of interest accordingly can be lowered in proportion to the

¹ Irving Fisher, *The Rate of Interest*, p. 94 ff.; Böhm-Bawerk, p. 622, and Böhm-Bawerk on the formation of capital; also v. Mises, pp. 356-8.

discounted future increase in goods. If it is lowered to a greater extent a reverse movement sets in which ends with the establishment of a new equilibrium. The increase in the fund of subsistence can be the result of voluntary saving. This part of v. Mises's deductions has been adopted by many authors who maintain that an adjustment of the credit-supply of the banking-system to the natural rate of saving would check the trade-cycle. They call this process the neutralizing of the evil effects of money.¹ v. Mises, on the other hand, has also advocated a different credit-policy which is similar to Schumpeter's theory. A policy of forced saving, on the other hand, increases equally the fund of subsistence. v. Mises, as we have seen above, has supported this view by the following arguments. The change in money-incomes, he holds, brought about by an increase in additional money will serve for the formation of capital-goods and so enlarge the existing fund of subsistence. He, therefore, admits² that an increase in money will lead to an increase in investment and that a new equilibrium-rate of interest will finally emerge which will be in proportion to the increase in the fund of subsistence. With the investigation, whether changes in monetary value will have a permanent effect on the structure of production and whether the investment activity stimulated by the credit-supply of the banking system can be maintained, v. Mises achieves his theory of

¹ The next chapter is devoted to the study and criticism of those authors.

² In his chapter, "Die sozialen Begleiterscheinungen der Geldwerts-änderungen," he expresses a different opinion, p. 199, he says that an increase in money does not mean an increase in the existing stock of goods. But it seems to me that he has expressed his opinion upon this subject on p. 192. An increase in money does not mean an increase in the existing stock of goods, but can result in an increase in goods if those people who benefit by the additional money use this money for the production of capital goods. His opinions were often misunderstood by his followers. v. Hayek has adopted only v. Mises's attitude of rejecting inflationary tendencies without being much aware of the latter's profound investigation of the influence of additional credits on the increase in productivity and neglecting v. Wieser's examination of economic development.

the trade-cycle. A change in the structure ¹ of production, he holds, will be a permanent one because, due to the issue of additional money, money-prices and money-incomes have changed and a re-establishment of the old proportions and conditions is accordingly impossible, furthermore the fund of subsistence will have increased in the way we have shown above. We must nevertheless be aware that the economic system will undergo some disturbances until this new equilibrium-rate is reached. Although the change in the structure of production will be a permanent one it is impossible to measure the increase in the fund of subsistence. The banking system therefore is unable to lower the rate in proportion to the discounted increase of the fund of subsistence. A process of adjustment will be necessary to check the depression which follows any lowering of the rate below the natural level.

v. Mises uses Böhm-Bawerk's picture of the productive process to demonstrate the correctness of his assumptions: the height of the natural rate of interest is determined by the productivity of the marginal roundabout method, i.e. the method which just yields an increment. The increment of the last economically possible method must be higher than the increment of the method economically impossible and is equal to the existing rate of interest. The period which the roundabout method requires must be in proportion to the existing fund of subsistence. The pressure of non-utilized factors of production would force a change in the roundabout method if the period of production did not utilize the whole fund of subsistence. If, on the other

¹ Compare v. Mises, pp. 372-3, 368 ff., etc., where he explains why the old equilibrium-rate cannot be maintained. "Eine genaue Wiederherstellung des alten Preisverhältnisses (holds v. Mises, p. 373) zwischen Produktion und Konsumgütern ist nicht möglich, da sich einerseits infolge des Eingreifens der Banken Verschiebungen in der Besitzverteilung ergeben haben, andererseits die automatische Gesundung des Darlehensmarktes nur unter krisenhaften Erscheinungen von sich gehen kann, die einen Teil des in allzu weitläufigen Produktionsumwegen investierten Kapitals verloren erscheinen lassen."

hand, more lengthening roundabout methods are applied which do not correspond to the existing fund of subsistence, a crisis must arise for the same reason and there will be a tendency to re-establish the old equilibrium.¹ v. Mises explains this tendency in the following way. The artificial increase of additional money does not only lower the money-rate of interest below the natural rate, but it even lowers the money-rate of interest below the discounted increase in the fund ² of subsistence. The result is the application of lengthening methods which correspond neither to the previous number of intermediate products and consumers' goods nor to the increased number of intermediate products.³ The supply of consumers' goods will not be entirely interrupted because of the continuous succession of production and consumption, and all consumers' goods therefore cannot be consumed at a certain moment. The next effect of this increase of productive activity nevertheless will be a scarcity of consumers' goods which forces the consumer to an involuntary abstention of consumption. Prices of producers' goods will rise, but consumers' goods will only rise moderately in proportion to the increase in wages.

Soon a reverse movement sets in : prices of consumers' goods rise and prices of producers' goods fall, i.e. the money-rate rises and approaches again the natural rate of interest.⁴

¹ The application of more lengthening methods depends on whether all possible shortening methods are applied (p. 320, v. Mises, p. 11, *Exkurs*, Böhm-Bawerk).

² Every artificial lowering of the rate of interest which is due to the issue of additional money brings about a change in money-incomes. As this change in money-incomes is only brought about gradually, the fund of subsistence increases at the expense of those whom the increase in money reaches very late.

³ The increased number of intermediate products is a result of the change in the money-incomes which compels some classes to involuntary saving (those classes of people which the increase in additional money reaches very late).

⁴ Compare pp. 327, 373. It is obvious that the more and more rapid decrease in the purchasing power of money will also cause a reverse movement of the loan-policy of the Central Banks because of the rising distrust of the public in the currency. This will precipitate the movement of the money-rate towards the natural rate.

The reverse movement of prices will be due to an increase of producers' goods which lowers their prices and due to the increasing scarcity of consumers' goods. If, then, shortening methods¹ are applied in order to re-establish the former supply of consumers' goods, capital-goods and original factors of production invested in lengthening are non-utilized, especially in those trades where a round-about production was just begun.² v. Mises has thus described the causes of crisis and depression and why a process of adjustment is made inevitable.

The question of the length of this process of adjustment can easily be decided with regard to the other contents of v. Mises' theory. It will depend on the former credit policy of the Central Banks. If the banks have kept the issue of loans as much as possible within the proportion of the discounted increase of the fund of subsistence, the period of adjustment will be small and vice versa. It is, therefore, in the power of the banking system to mitigate the unwholesome results of the upward movement. v. Mises, however, does not clearly state how the credit-supply of the banking system could be adjusted in proportion to the increase in the fund of subsistence. An attempt to measure this increase in the fund of subsistence in terms of money was made by Hayek. Hayek in this sense has further advanced v. Mises' theory. He considers the problem more from the point of view whether or not money will remain neutral towards relative prices of commodities, that is to say how a development without disturbances could be maintained.

¹ Böhm-Bawerk mentioned that entrepreneurs will adjust their demand to the estimates of the consumer, and will produce according to the estimates of the consumer present or future goods. All the authors with whom we are dealing in this chapter have based their theories of the trade-cycle on this line of thought.

² O. Engländer refers to this idea in his theory of the trade-cycle. He claims that a process of saving can attribute to the maintenance of lengthening methods if it turns involuntary into voluntary saving. A new equilibrium-rate will emerge which will move in proportion to the change in the structure of production caused by the credit-policy of the Central Banks.

The solution which Hayek gives of this problem is terribly simple ; it confines the credit supply to the amount of saving deposits. Hayek, nevertheless, who claims to have based his theory of the trade-cycle entirely on v. Mises' observations, seems to have misunderstood v. Mises :—

(1) He disregards the increase in productivity which counterbalances to some extent the change in the money-incomes which follow any credit expansion. Hayek ¹ disregards the new equilibrium-rate which will emerge due to this increase in productivity and which will check the re-establishment of the old equilibrium in which Hayek seems to believe.

(2) He differs from v. Mises in deciding the question whether or not additional money is indispensable for economic development. Although not unaware of the influence of monetary changes on production, he suggests a policy of stable development which is made possible by neutralizing monetary influences on production. But Hayek is against any change of the old equilibrium. "I am indeed assuming," he says, *E. J.*, 1932, "that it is generally thought desirable to avert any development which leads away from an equilibrium-position and which therefore makes a revulsion inevitable sooner or later." v. Mises, on the other hand, sees in the change in the money-incomes and in the general decrease in the purchasing power a characteristic feature of economic development.² A change from one equilibrium into the other, therefore, is only made

¹ Compare *E. J.*, 1932, Sraffa on "Money and Capital" pp. 72 ff. Sraffa correctly objects that any change in money incomes works against the consumption of capital goods. This change is brought about by the issue of additional money. The result, which v. Mises admits and Hayek overlooks, is that resources will be forced to lie idle. A re-establishment of the old equilibrium is impossible, as after a period of disequilibrium a new equilibrium will emerge. Hayek himself admits the possibility of an equilibrium in his answer to Sraffa which is based on v. Mises' observation, but Hayek like v. Mises inclines to overlook the magnitude of such a change.

² v. Mises, pp. 139-143 ; 2nd edition, pp. 132-3, 267, 268, 319, 320. Sometimes v. Mises seems to have anticipated Schumpeter's theory of economic development.

possible by the dynamic influences of money. His study of the function of the fund of subsistence indicates how far the bank-rate could be lowered.

Hayek differs in his views also with Engländer's theory of the trade-cycle, the one attributing to money a more passive, the other a more active, role. Both theories, nevertheless, are based on Böhm-Bawerk's picture ¹ of the structure of production and on v. Mises' examination of the influence of additional credits on relative prices of commodities. Engländer and Hayek consider the problem especially from the point of view of whether or not the price-level will remain unchanged. The problem is whether the banking system were to keep the demand for real capital within the limits set by the supply of savings or whether they should keep the price-level steady.

§ 2

Hayek's Theory of a Neutral Money-Supply

In order to understand Hayek's theory we must examine the meaning of a policy of neutralizing money. Does it mean price stabilization, does it mean stabilizing the value of money, or does it mean, as Koopmans ² has pointed out, the adjustment of monetary phenomena in accordance with the natural tendency of the economy towards an equilibrium This question can easily be answered: we are not only concerned with the stabilization of certain price movements or with finding a stable standard of value, but we have to examine the development of the economy as a whole and

¹ v. Mises first used Böhm-Bawerk's picture of the structure of production to an explanation of the trade-cycle by referring to their connection with monetary changes.

² Koopmans in his essay, "Zum Problem des neutralen Geldes" (*Beiträg zur Geldtheorie*) explains the characteristic elements of a policy of neutralizing money, and of the ideas and principles on which Hayek has based his theory of the trade-cycle. *The following short summary of a theory of neutral money enables a better understanding of Hayek's rather complicated theory.*

the circumstances under which the economy undergoes no disturbances from the monetary side. The idea with which we are dealing now is as old as the development of economic thought. It is a restatement of the ideas of the old Physiocrats and Adam Smith: "Laissez faire, laissez aller, le monde va de soi-même." It is the old view that without interference from outside the economic system could follow its natural tendency towards the optimal equilibrium. It does not imply the maintenance of a purely static economy, but the exclusion of certain dynamic influences which have proved themselves to be unwholesome for the economic system. Neutral money means a money-supply which enables a steady development without disturbances, or a development which is brought about by non-monetary factors. Money is not neutral in the case of the creation or destruction of money, or in the case of hoarding or dis-hoarding. The relation between hoarding and the creation of new money is this, that the hoarding can be counter-balanced by the creation of new money. Koopmans considers every kind of accumulation¹ or issue of money as effects of non-neutral money, because of the time which elapses between these two actions (*time-lag*). Every monetary phenomenon which creates a demand without equivalent supply of goods is an effect of non-neutral money. The problem of neutralizing money is that of checking the unwholesome effects of inflation or deflation, that is to say determining whether the money-supply either exceeds or falls short of a standard corresponding to the postulates of a

¹ Koopmans uses the terms "horten" and "enthorten" which seem more adequately translated by the terms used by the author of this thesis. The term "hoarding" does not correspond to the special meaning Koopmans seems to have attached to the aforesaid term which, according to the context of his essay, sometimes means both hoards and savings. Koopmans considers, e.g., saving as a phenomenon which does not disturb stable development if saving does not represent an act of hoarding; but in a money-economy every act of saving is a monetary phenomenon and it is doubtful, it seems to me, whether changes in the money-supply due to saving can be entirely neutral towards economic factors and datas.

"neutral money". Any disturbance of this development which is due to monetary factors (changes in the money-supply¹ which are not in proportion to changes in the structure of production) have to be prohibited. It is, therefore, not self-evident from the point of view of neutral money that *the money-supply should be adjusted to the increasing or decreasing volume of production*, the purposes of neutral money being the *adjustment of all monetary factors to a development, brought about by mere economic factors*. Koopmans (likewise Hayek) accordingly does not accept any postulates which imply an elastic money-supply. The money-supply should only be elastic with regard to changes in the proportion of money transactions which bring about a hoarding or dis-hoarding of money and accordingly abandon a standard of neutral money.² A change in the quantity of money is thus made necessary in order that the old equilibrium can be maintained.

Changes in the structure of production (in the world of commodities), on the other hand, cannot influence the neutrality of money, and the total sum of money (with the above exception) need not change in order to keep money

¹ In a discussion with Keynes, *Economica*, 1931-2, Hayek has made it clear that although Keynes, emphasizing a contrary view, always seems quietly to assume that a divergence of the equilibrium-rate from the natural rate is brought about by a change in the supply of money, Wicksel, on whom Keynes seems to rely, often has stated that this divergence is due to the elasticity of the monetary system, i.e. the possibility of adding money to, or withdrawing it from, circulation.

² By changes in the proportion of money transactions I mean, either when stages of production which were carried through by different firms are contracted in the hand of one firm or when stages of production which were carried through by one firm are now carried through by different firms. The first case represents an act of dishoarding as sums of money are released which served in the purchase of the products of these different stages. The second case represents a case of involuntary hoarding: sums of money are needed for the purchase of intermediate products as stages which before were carried out by a single firm are now produced by different firms. However, also in the case of a change in the length of capitalistic methods of production a change in the money-supply may be required not because the physical magnitude of the goods-stream has changed, but because money has been transferred from a sphere where the coefficient of money transactions has been higher to one where it is lower, or vice versa.

neutral towards a natural development. We have now discussed Koopmans' ¹ theory ² of neutral money and have found that (1) a steady development consists in the natural tendency of the economy towards an optimal equilibrium, and (2) that this natural development should not be disturbed by non-economic factors. It is doubtful, nevertheless, whether a policy of neutralizing money can ever be put into practice, and whether all influences of money can ever be eliminated. The fault committed by Hayek and Koopmans is to have failed to examine how development takes place in a money-economy, as such a development must be rather different from the development of a barter-economy. These theorists only examined how the influences of money can be eliminated without asking themselves whether or not these influences are the real cause of dynamic changes. Their mistake was to take as their starting-point the economic system in an equilibrium-position. The question which should have been decided by the defenders of a policy of neutralizing money is whether the deposit of money as savings and the granting of these savings as loans (to producers or consumers) are really reconcilable with a policy of neutralizing money. Some authors of the Austrian school were of contrary opinion. Wieser once expressed the opinion that only the money assisting the exchange of goods is the object of our investigation. The total sum of money-incomes is decisive for monetary changes. It is

¹ The postulates of such a policy were first developed by Wicksell. The price-level would remain unchanged if the natural rate of interest would coincide with the money-rate of interest. The natural rate is the rate which is restricted to the amount of real savings. Prices would neither fall nor rise if the money-rate would be adjusted to the natural rate. The money-rate corresponding to these postulates is the rate which is determined by the amount of saving deposited in the banks.

² I still wish to emphasize my former statement that Koopmans' theory is based on Hayek's theory of neutral money (compare, especially, Lectures I and III), but Koopmans has better explained the ideas and principles of neutralizing money (compare "Zum Problem des neutralen Geldes" pp. 216 ff., 228, 237, 238, 241-3, 244, 272, 273, 267 ff., 283, 265, 260); Hayek, *Prices and Production*, pp. 103-6, 41, 42, etc

obvious that only the money behaving as a medium of exchange is the object ¹ of a policy of neutralizing money, as according to the above discussed theory, only changes which affect the medium of exchange cause the disturbances in a steady development. It seems to me, therefore, that the depositing of money as savings means a withdrawal of money from its ordinary destination and the granting of these deposits as loans can be considered as an act of throwing new money into circulation. Saving implies a change in the monetary supply and the problem is whether this change in the monetary supply will not have the same disequilibrating effects in the short period as any other change in the supply of additional money. Schumpeter seems to be of this opinion when he distinguishes between hoards, sums of money which are not in use (circulation), but destined for future use, and reserves which are kept in case of a sudden emergency and when he claims that savings can be classified in either one of these categories.² Hayek,³ on the contrary, considers saving as a factor which does not disturb a steady development. Saving is the natural cause of such a development as it does not bring about a disequilibrium in a barter-economy.

The task of the banking system is to keep investment in proportion to the demand for new investment. The demand for new investment is determined by the actual rate of saving. According to Hayek,⁴ "in order that the supply and demand for real capital should be equalized, the banks must *not lend more or less than has been deposited with them as*

¹ Hayek often has stated that subject to a policy of neutralizing money is the "quantity of money in circulation".

² Compare v. Wieser, *die Veränderungen des Geldwertes* (Sammlung Hayek) and Schumpeter, "Das Sozialprodukt und die Rechenpfennige," *Archiv. für Sozialwissenschaft und Sozialprodukt*, v. Mises, pp. 250 ff., 127 ff.

³ Likewise Koopmans.

⁴ Hayek, p. 23 ff. But compare also Keynes upon this subject, and Wicksell, *Geldzins u. Güterpreise*, pp. 111, 102, 143, preface, etc.; v. Mises, pp. 98 ff., 364, 365. Compare also Sraffa on Hayek's theory, *E.J.*, "Money and Capital," 1932, pp. 42 ff., 237-249.

savings. And this means naturally that they must never change the amount of their circulation." At the same time it was contended that in order that the price-level may remain unchanged, the amount of money in circulation must change as the volume of production increases or decreases.

These statements indicate the outline of the whole problem, and also Hayek's own view upon this subject. Hayek's proposition is to prove that savings are sufficient to finance economic progress and that economic development is characterized by shifts of the production goods from their present into a more future application. The economic system would undergo no disturbances if one could only neutralize money, that is to say, check its influence in "the relative values" of goods. If savings only would finance development the money stream would remain neutral, and the amount of stages of production would be kept in proportion to the existing fund of subsistence.¹ To make this line of thought more explicit: Hayek's theory is directed against any change in the money-supply which is not due to change in the actual rate of saving. His theory is correct if he can prove that saving implies a change in the money-supply without disturbing the equilibrium. Does Hayek, however, prove that a change in the money-supply due to saving does not bring about price-movements which have disequilibrating results in the economic system. Does not Hayek commit the error of the old quantity-theory when he claims that the total quantity of money should remain unchanged if the economic system undergoes no disturbances? The error of the old quantity-theory was to neglect the reaction of the price-mechanism on changes of the monetary supply. We have pointed out before that saving in a money-economy implies changes in the monetary supply (the quantity of money in circulation) which will

¹ Compare v. Mises' theory of the trade-cycle upon this subject, especially Chapter v of *Theorie des Geldes und der Umlaufmittel*.

have the same influence on the price-mechanism as any change in the monetary supply. Hayek holds that these changes in the price-mechanism can have no unwholesome effects on the economic system. Hayek does not deny that saving brings about a change in real incomes, but this change, he emphasizes, will only be temporary and will have no disequilibrating effects as such a change depended on the voluntary decision of the consumer. The fault committed by Hayek is this : Saving will enter the economic system by way of loans granted to entrepreneurs who will invest the borrowed money in the most profitable trades. The question is to find the most profitable trades in view of the fact that (a) as a rule prices of all stages depend on the prices of the final consumption-goods, (b) that prices of one stage of production rise if prices of the preceding stage have risen. It is these interconnections of relative prices of commodities which Hayek seemingly disregards, although he draws our attention to them. In the short period it will be impossible for the entrepreneur to sum up the situation at the market. The fall in prices of consumers' goods and the fall in prices at the lower stages must in the short period unfavourably influence the productive activity and a short period-disequilibrium will be the inevitable result of saving. It is the short period disequilibrium which is relevant for a policy of neutralizing money and which such a theory claims to prevent. The aforesaid observations will enable a better understanding of Hayek's theory of the trade-cycle.

Hayek's theory of the trade-cycle tries to combine two principles. It contends that the disturbances of the trade-cycle are caused by monetary influences and that once the impulse is given changes in the structure of production must inevitably follow. "Once," he says, "owing to the disturbing influence of money, even a single price has been fixed at a different level from that which it would have

formed in a barter-economy, a shift in the whole structure of production is inevitable, and this shift, so long as we make use of static theory and the methods proper to it, can only be explained as an exclusive consequence of the peculiar influence of money.”¹ These monetary movements with their influence on price-formation are brought about by the adjustment of the volume of money to the requirements of production. The adjustment of the credit system to the requirements of industry causes fluctuations of the rate of interest with the further result that a boom is thus made possible which will nevertheless be inevitably followed by a crisis. The theory that fluctuations of the rate of interest are responsible for disturbances of the trade-cycle was first developed by Wicksell. Wicksell had found that the banking system can adjust its money-supply to the requirements of industry and so lower the rate of interest below its natural level. He defined the natural rate as that rate which would rule if there were no money-transactions and real capital were lent *in natura*.² Wicksell contends that any lowering of the money-rate below the natural rate will give rise to a reactionary movement towards the natural rate. Equilibrium can only be established if both rates coincide, i.e. the money-rate³ and the natural rate. Wicksell has thus defined a uniform rate of interest which does not correspond to the real facts. In reality there is a great number of divergent rates. Hayek was aware that an equilibrium rate as defined above does not exist, and he explains why this hypothetical construction is of no use for a theory of the trade-cycle. Beyond this, he says, none of the various rates of interest existing is entitled to rank as the rate of interest described by static theory, on which all other rates depend, differing only in the extent to which they

¹ Hayek, *Monetary Theory and the Trade-cycle*, p. 179.

² Compare Hayek, *Monetary Theory and the Trade-cycle*, pp. 200-210; Wicksell, *Geldzins u. Güterpreise*, p. 93; v. Mises, p. 68. etc.

³ The money-rate corresponds to the bank-rate.

are affected by special circumstances. The process of interest-fixation, which is at the basis of pure theory, never in fact follows the same course in a modern credit-economy ; for in such an economy *the supply of, and the demand for, savings never directly confront each other*.¹ It is nevertheless necessary to find the true explanation of the natural rate, as the conception of an equilibrium rate of interest is the starting-point of every modern theory of the trade-cycle. Wicksell himself has, as Hayek points out, suggested the correct solution of the problem by defining the natural rate as "that rate at which the demand for loan-capital just equals the supply of savings".² He thus tries to overcome the difficulties of many divergent natural rates by basing his theory on a uniform rate which can only be a money-rate. (This definition also yields a better understanding of the Wicksellian theory than one would obtain by his other definitions of the natural rate.)

In *Prices and Production* Hayek has written a theory in support of this thesis.³ Hayek uses a diagrammatic representation to elucidate—

¹ For these reasons we have to consider every act of saving as an effect of non-neutral money. Saving creates a demand for future goods which has no equivalent present supply. By withdrawing money from the purchase of present goods, we destine it for future purchases, and we therefore hinder money from serving as a medium of exchange. Because of time-lag elapsing between the act of saving and the act of investing we may consider consequently saving and investing as an act of hoarding or as the case may be, dishoarding, and that accordingly a bank-rate adjusted to the rate of saving does not serve the purposes of neutral money.

² It is to this definition Hayek refers as an equilibrium rate. It would check the prevailing confusion very much if one could always interpret the equilibrium rate of interest in the sense Hayek and Keynes have understood it. Hayek, *Monetary Theory and the Trade-cycle*, p. 210 ; compare also Keynes, *The Treatise on Money*, pp. 196-8. Keynes says, p. 197, in a criticism of Wicksell, "Whilst Wicksell's expressions cannot be justified as they stand, and must seem unconvincing without further development, they can be interpreted in close accordance with the Fundamental Equation of this Treatise."

³ I can only refer to the first chapter of this thesis. Here a small reference only to Böhm-Bawerk's theory is possible. See Böhm-Bawerk, ii, Abschnitt ii, Buch iv, "Der Kapitalgewinn des Unternehmers." We will find in this chapter a sufficient explanation of the ideas which have influenced Hayek and Wicksell, but compare also Böhm-Bawerk ii, ii Buch, i Abschnitt,

- (a) the movements of money-incomes,
- (b) the function of saving,
- (c) the function of the rate of interest.

His diagrammatic representation yields a picture of the productive process :—

“ It represents the successive applications of the original factors of production which are needed to bring forth the output of consumers’ goods accruing at any moment of time by the hypotenuse of a right-angled triangle. The value of these original factors of production is expressed by the horizontal projection of the hypotenuse, while the vertical dimension measured in arbitrary periods from the top to the bottom, expresses the progress, so that the inclination of the line representing the amount of original factors of production used means that these original means of production are expended continuously during the whole process of production. The bottom of the triangle represents the value of the current output of consumers’ goods. The area of the triangle thus shows the totality of the successive stages through which the several units of original factors of production pass before they become ripe for consumption. It also shows the total amount of intermediate products which

“ *Der Kapitalistische Produktionsprozess*,” ii, Buch iii, resp. iv Abschnitt, “ *Die Funktion des Kapitals in der Produktion*,” resp. “ *die Theorie der Kapitalsbildung* ”. Hayek’s representation of the productive process is strongly influenced by Böhm-Bawerk and understanding it is only possible from the knowledge of the latter’s theory. Böhm-Bawerk in his theory of interest had emphasized the fact that lengthening methods of production are more productive and that therefore capitalistic production is characterized by the length of the method of production. The lengthening of the method was made possible by postponing the use of present productive forces for a more deferred period and by using the original factors of production successively. The length of the productive method depended on the amount of actual saving, that is to say on the available fund of subsistence. Entrepreneurs could ensure the future greater productivity for themselves by exchanging present goods at each stage of production for the future yield of labour. Böhm-Bawerk himself pointed out that money can take the place of the fund of subsistence. Hayek had only to elaborate this idea to make it suitable for the explanation of a money-economy.

must exist at any moment of time, in order to secure a continuous output of consumers' goods."¹

The diagram below is according to Hayek a graphic illustration of the productive process in a stationary society. It describes (1) the technical progress of goods and the increase in value which is in proportion to every successive stage of production ; (2) the successive application of the

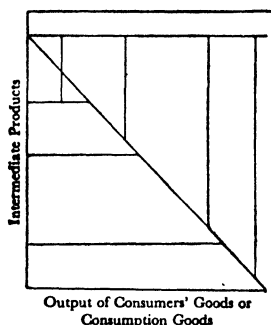


Fig. 1.—ORIGINAL FACTORS OF PRODUCTION (CONSUMERS' INCOME).

original factors of production without making allowance for the depreciation of plant² ; (3) the backward movement of money-incomes : from the purchase of consumers' goods at the foot of the triangle the money streams back through the system, divided at each stage between the primary factors working at this stage and the finished product of the previous stage. Hayek considers a *stationary state* in which the output of consumers' goods is necessarily equal to the total income from the factors of production, and is

¹ We have quoted Hayek verbally in order to give a complete explanation of Hayek's rather complicated diagrammatic representation.

² The fixed capital is not represented as it enters into the system of money-streams in respect of interest, payments, and depreciation charges, which to a certain extent can be interpreted as exchanges of the original factors of production for consumption-goods (money).

exchanged for this income. Considering the diagrammatic representation it thus becomes apparent that the proportion of money spent for 'consumers' goods and money spent for intermediate products is equal to the proportion between the total demand for consumers' goods and the total demand for the intermediate products necessary for their continuous production. In other words it makes clear the relation between consumers' income, total costs and the costs of producing consumption-goods.¹ This relation indicates that the amount of money spent on producers' goods during any period of time may be far greater than the amount spent for consumers' goods. The reason, therefore, is that goods are exchanged several times before they reach the consumer, and in the average as many times as the total amount spent for producers' goods is larger than the amount spent for consumers' goods.

Hayek does not confine the use of his diagram for the above purposes. He further extends the use of this diagram to demonstrate the function of saving and the process of change brought about by saving. In order to demonstrate the function of saving, which consists in enabling a transition from less to more stages, Hayek has used two diagrams, the one to describe the *equilibrium before the change has taken place*, the other to describe the *equilibrium which has been reached after the process of savings had taken place*. These two figures² represent the proportion of the demand for consumers' goods and the demand for intermediate products, and this proportion, arbitrarily chosen, may be in Fig. 2, 1 : 2 and in Fig. 3, 1 : 3. Figs. 2 and 3 differ from Fig. 1 in that we consider the continuous process from the point of view of what happens in a given period. It is convenient for these purposes to count only that part of the total process of production which is completed during one of these periods, as a

¹ Compare Durbin, pp. 117-121, and Hayek, pp. 41, 42.

² *Vide* next page.

separate stage of production. Each of the successive shaded blocks in the diagram will then represent the product of the corresponding stage of production as it is passed on to the

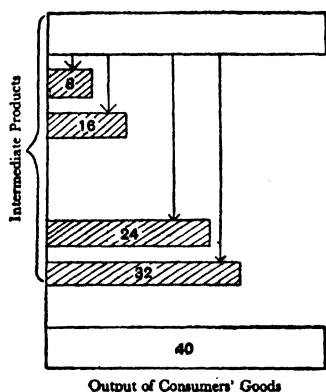


Fig. 2.—ORIGINAL FACTORS OF PRODUCTION (CONSUMERS' INCOME).

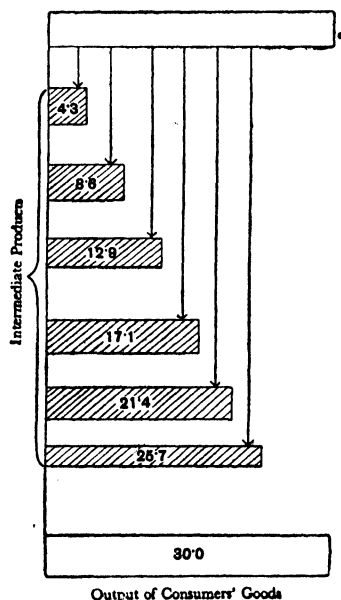


Fig. 3.—ORIGINAL FACTORS OF PRODUCTION

next, while the differences in the length of the successive blocks correspond to the amount of original factors of production used in the succeeding stage. The white block at the bottom represents the output of consumers' goods during the period.¹

The above figures, according to Hayek, enable an

¹ It must be realized that Hayek only gives a picture of the movements of the value of goods without taking into account the increase in physical output.

examination of the changes in the structure of production to be made, that is to say, an examination of a transition from a production of few stages to one of more stages and vice versa. A change in the length of the method of production is undertaken for the purposes of obtaining greater physical output.

Such change in the length of the productive process is either a result of changes in the volume of voluntary saving or a result of changes in the quantity of money which alters the fund at the disposal of the entrepreneur.

Hayek first examines the change in the structure¹ of production brought about by voluntary saving. Saving means a transference of original factors of production from the production of consumption-goods to the production of capital-goods. It makes the production of goods of lower order (stages) less profitable. The mobile factors of production are therefore transferred to higher stages, that is to say they are used in the production of goods of higher order. Saving hence results in more money being spent on intermediate products and goods of higher order and less² money on goods of lower order. *It is the latter effect of saving Hayek seemingly neglects.* According to the teaching of the Austrian school the consumer ultimately regulates the direction of production. The fact that less money is spent on consumption-goods must have some influence on the production of capital-goods. Capital-goods help to increase the output of consumption-goods and it can hardly be believed that in a time when the demand for consumption-

¹ Hayek assumes a state where all productive forces are fully employed because (a) an equilibrium where no unused resources and factors of production exist has been explained by ordinary equilibrium theory and we intend accordingly to explain a development towards a new equilibrium; (b) "The existence of such unused resources is itself a fact which needs explanation." Hayek has failed to explain dynamic changes, as we shall see later.

² Compare Hayek, *Gibt es einen Widersinn des Sparens*, pp. 25, 28, 30, 31, 32-5, and "Reflections on the Pure Theory of Money of Mr. Keynes", pp. 27, 28 ff., Part ii, *Economica* for 1932.

goods decreases, entrepreneurs will produce more capital-goods. - The main problem, therefore, Hayek states in his "*Gibt es einen Widersinn des Sparens*" p. 25, is *how does the new demand for intermediate products (capital-goods), which is due to an increase in the rate of savings, fit in the economic system and can this effect of saving be fulfilled without disturbances?* The solution which Hayek gives to this problem is again to be found in "*Gibt es einen Widersinn des Sparens*". It is a fact, he holds, that more money is spent for capital-goods than for consumption-goods. New investment takes place in the same way as the process of replacing and maintaining the old investment. Here also more money is spent on producers' goods and less money on consumption-goods. But Hayek overlooks that the demand for producers' goods has increased relatively to the demand for consumption-goods. He neglects the time which elapses between the abandoning of the old proportion between producers' goods and consumption-goods and the establishment of the new proportion. How is it possible that producers of consumption-goods do not suffer losses and accordingly no disturbances can occur from this side. The solution of this problem is again to be found elsewhere. In his criticism of Keynes (*Economica*, Part ii, February, 1932), Hayek maintains that producers of consumption-goods will "increase temporarily their holdings of these goods" and "by holding them for some time, entrepreneurs will probably be able to dispose of them at the former price". Hayek, however, neglects that in this case producers of consumption-goods will have to suffer losses and will have to bridge this gap in some way. He seems to believe that the losses suffered in the period of development would be bridged by the reduction in money-costs which follows any increase in the production of capital-goods. *The problem which Hayek does not solve is how the production of consumption-goods would be financed in a period where all the available credit-supply is invested*

in the trade of capital-goods and where the quantity of money in circulation is supposed to remain unchanged. If producers of consumption-goods borrow money with the intention of maintaining their old output, the effects of saving as Hayek himself has pointed out would be frustrated, and additional credits would have to fulfil the function of saving. Hayek claims, therefore, that one should reduce consumption and the sale of consumption-goods in order to enable the production of more capital-goods. This view is rather inconsistent with the view that entrepreneurs should continue to produce at the same rate of output in order to increase their holdings and dispose of them later at the former price, because Hayek assumes full employment of all productive forces. It would be accordingly difficult to acquire the necessary means of production, unless the quantity of money in circulation would be increased.

Hayek, therefore, does not prove that saving will not create serious disturbances in a money-economy. He overlooks that producers of consumption-goods will suffer great losses and that due to this fact the demand for capital-goods (on the market) must temporarily decrease.

Furthermore, Hayek neglects to prove that the increased physical output of consumption-goods which is a result of an increase in capital-goods can be sold without loss. If the quantity in circulation remains unchanged, the reduction of consumption and the sale of consumption-goods implies not only that prices of consumption fall relatively to prices of producers' goods, but also that the total spent on consumption-goods falls absolutely to the total spent on producers' goods. Now is it possible, however, for the economic system to undergo no disturbances in view of the fact that as prices of producers' goods in the short period rise relatively to prices of consumers' goods, money-costs are greater than the earnings, obtained by the sale of the finished products. Only after an equilibrium is reached

will Hayek's statement be true that the money-stream flowing from the consumers' goods to the original factors of production becomes longer and narrower (Fig. 3) and accordingly more effective. The final result of saving will always be an increase in capital-goods (intermediate products) and an increase in consumption goods. Some time will have to pass, however, until the decline in prices of the finished product will be followed by a proportionate decrease in money-costs.

Therefore, Hayek's explanation of these problems is not complete. Only in the long period will the fall in cost due to the increase in capital-goods, and the decline in prices, due to the increased output of consumption-goods, increase the effectiveness of money, that is to say, the same amount of money will be able to effect all transactions without having been increased in proportion to the increase in physical output.

Hayek's idea is that if investment takes place in proportion to the amount of actual money savings, *money remains neutral towards prices as the movements of prices are only influenced by the voluntary decisions of the consumer*. Investment, in other words, must take place in proportion to the reduced demand for consumption-goods. As the persons who decided to save a part from their money-income will get a greater proportion of the increased total real income, the reduction in the demand for consumption-goods will be only temporary. The new equilibrium, therefore, will be reached when the increased physical output of consumption-goods appears at the market.

The conclusion which Hayek derives from these statements is that (a) the banks should not lend more nor less than has been deposited with them as saving, that (b) if they lend exactly as much as is deposited, the equilibrium reached will be permanent, whereas involuntary saving could not effect a permanent change in the structure of production.

Involuntary saving will for a time have the same effects as voluntary saving. More lengthening methods will be applied and investment in capital-goods industries will take place. But its result will be either a subsequent destruction of at least a part of the capital accumulated or a misdirection of production with a consequent crisis. The misdirection in production consists in applying lengthening methods which cannot be maintained. The destruction of the capital accumulated by forced saving has the following cause: If the sacrifice of the consumers is not voluntary, that is to say, if it is not made by those who will reap the benefit from the new investments, according to Hayek an attempt will be made to expand consumption to the usual proportion as soon as their money-receipts rise again.¹ Capital will be reduced to its former amount. Hayek now holds that not only can the lengthened methods no longer be maintained, but also the efforts of previous saving would be frustrated. The greater profitability in the trade with present goods would induce entrepreneurs to abandon lengthening methods and to use unavailable productive forces for the production of present goods. Hayek compares the effects of additional credits accruing to producers with those which accrue directly to the consumers. The result, according to Hayek, is the same and it is only a question of time when the additional credits will accrue finally to the consumer and frustrate the effects of capital-formation. Whether or not it is true that capital accumulated by forced saving will be, at least partly, dissipated we will discuss later.

We now confine our criticism to the following statements:

(1) Hayek seems to have based his theory on the assumption of a constant rate of saving and of full employment of all

¹ There will be more to say about this later. The rise in money-receipts is bound to happen as the increase in additional money must increase in a certain time, also the money-receipts of the original factors of production, especially as new investment takes place and if there is full employment.

resources available and of all original factors of production. Such a state only exists at the top of a boom. Hayek should, therefore, have made allowance for at least temporary unemployment¹ and of the consequences of an increasing rate of savings and temporary unemployment. It was, according to my opinion, correctly maintained by Durbin that changes in the rate of saving can lead to temporary disequilibrium because full employment exists only at the climax of a boom. Saving can be the cause of disequilibrium as saving means a decrease in the demand for consumption-goods. The losses in these trades will not be immediately offset by gains in the trades of producers' goods, as the demand for producers' goods will temporarily decrease, being dependent on the demand for consumption-goods. Given full employment the question is whether a fall in the rate of interest, due to an increase in the rate of saving, does not lead to greater roundaboutness. That is to say, would we be justified in assuming that if saving exceeds investment, the possibility of profits will make entrepreneurs over-value the profitability of their investments and so lead to an investment-activity *which cannot be maintained*.

(2) Hayek incorrectly assumes that the difference between the decision of the consumer and of the entrepreneur have no disturbing effect on production, and only because, to use a definition of Irving Fisher, saving and investment differ only in degree, depending on the length of time between the expenditure and the enjoyment, *there will be no disequilibrium*. It is true that the decision of the consumer to defer enjoyment will influence the decisions of the entrepreneur and will lead to the creation of new capital-goods ;

¹ Unemployment is especially due to the fact that goods of highly specific character respond less adequately to changes on the demand-side. In the industries producing such goods there must be temporary unemployment when such changes occur. The unemployment in these stages will come to an end when, provided more lengthening methods have been applied, the productive process has reached the stage of this former unemployment.

but is it possible that the consumer can keep the investment-activity within the proportion of his own decisions?•

(3) Hayek has derived his conclusions from his diagrammatic representation of the production process, but I rather think that this diagrammatic representation only gives a picture of an equilibrium-position without giving any indication how the change between two equilibria (compare Figs. 2 and 3) has taken place. We may attribute to this part of Hayek's theory a term which Akerman¹ has introduced into science: Hayek's theory is "time-less" because it does not explain the period in which changes in demand, inventions, and the accumulation of capital take place, although it attempts to do so. In other words, it does not consider fluctuations of the rate of interest and the growth of capital but merely describes equilibrium-positions of the rate of interest and merely states that an accumulation of capital has taken place. The question is, does Hayek consider the consequences of a fall in the rate of interest which is the result of an increasing rate of saving?

Hayek was aware of the incompleteness of his diagrammatic representations. He therefore tried to support his theory by an examination of the price-mechanism and its reaction on fluctuations in the rate of interest. It is therefore necessary to submit his analysis of the function of the rate of interest and its correlation with the movements of relative prices of commodities² to a more careful examination. The function of the rate of interest is the following³:—

(1) It selects the more profitable from the less profitable roundabout methods. A fall in the rate of interest allows less profitable means to be applied because the rate of

¹ Compare Akerman, *Progress and Economic Crises*, and T. E. Meade's criticism of it in the *E.J.*, 1932, pp. 432 ff.

² The study of movements of relative prices of commodities is the only method of an examination of economic changes. Prices are milestones on the way of economic development, and are characteristic for the direction of the productive activity of an economy.

³ Compare Durbin, pp. 124 ff. Hayek, *Prices and Production*, lecture iii.

interest has (2) the function ¹ of reducing money-costs not only below the new level of prices of producers' goods, but also below the new prices of the increased output of consumers' goods provided that investment has taken place in proportion to the amount of voluntary saving.²

The economic system will undergo no disturbances if the fall in the rate of interest is due to voluntary saving and the supply with additional money is kept within the proportion of this voluntary savings. Money would be neutral towards the natural development of the economic system and no disequilibrium could arise.

We must, to examine Hayek's theory, consider the effects of a decline in the rate of interest on relative prices of commodities from two points of view. We must examine (a) the results of a decline in the rate of interest brought about by voluntary saving, and (b) those brought about by additional money. Hayek describes the steady development of the economic system due to voluntary saving in the following way. If saving takes place, such movement will react on relative prices of commodities and will cause a rise in prices in some trades and a decline in others. The rise in prices will occur in the trade of producers' goods, the fall in prices in the trade of consumers' goods because saving means a postponement of enjoyment. One saves with the intention of increasing and improving one's future enjoyment, and this is only made possible by increasing the existing stock of means of production. The prices of these goods will rise relatively to the demand. But the prices will not rise equally

¹ In "Reflections on the Pure Theory of Money of Mr. Keynes", part ii, Hayek has pointed out that the problem of the trade-cycle consists in the divergence between the increase in physical output and the increase in value. The question is whether the yield of our production will cover the rate of interest. The above proposition is Hayek's proposal for a solution of the problem (compare Hayek, *Economica*, 1932, February, pp. 24-5).

² Compare Strigl, *Die Produktion unter dem Einflusse einer Kreditexpansion*, p. 191. The rate of interest Strigl holds determines the expansion of any productive activity by selecting those productions which can afford the payment of interest from those who cannot afford it.

nor will they rise without exception, as we must make allowance for the different movement of prices of goods of lower and goods of higher stages. Prices of goods of lower stages will fall because of the fall in prices of consumers' goods, and make these trades less profitable. This will cause shifts of factors of production in the preceding stages. Hayek holds that "the rise of the price of the product of any stage of production will give an extra advantage to the production of the preceding stage", the reasons therefore are that the product of the preceding stages will rise in prices in their turn as the general demand for producers' goods has risen and as any rise in prices in the preceding stages permits greater profits to be obtained.¹

If Hayek had followed this line of thought he would have been aware that a fall in prices of consumers' goods must necessarily affect prices of producers' goods and that a short period disequilibrium would be the further result. This temporary crisis would be further reinforced by the fact that the demand for producers' goods does not simultaneously arise with the depositing of money as savings. Hayek admits that "in comparatively few cases will the people who have saved money and the people who want to use it in production be identical" and that therefore "in the majority of cases the money which is directed to new uses will first have to pass into other hands". He further admits that a process of voluntary saving will "cause temporary discrepancies between supply and demand". This disequilibrium, nevertheless, would only be temporary as the rate of interest would finally bring about a process of adjustment by "serving as a guide for the decisions of the individual entrepreneur". A change in the length of the method of production depends on the rate of interest. A lengthening method can only be undertaken if the rate of interest is lowered. With the rate of interest money-costs

¹ Compare Hayek, *Prices and Production*, pp. 72, 73, 74

are lowered, and thus the change in the length of the method of production will have been made profitable. Whether the proposition of Hayek holds true if we drop the assumption of full employment, we shall see later.¹ We have to examine now how the rate of interest exercising the above function is indeed determined.

The rate which Hayek has in mind is Wicksell's natural or equilibrium rate. It can easily be seen that the rate, depending upon the deposits of money-savings, varies with every increase or decrease of savings. We have, therefore, a number of many divergent rates of interest, corresponding to the different rates of savings. Does Hayek, however, mean that the banking system should adjust their supply of additional funds to the amount of these divergent natural rates? Or does he mean that the policy of the banking system consists in preserving a constant rate of savings? Or does not Hayek's wrong attitude towards the credit-policy of the banking system arise from a wrong method of investigation, *the subject of his investigation being an economy in an equilibrium position*?² At the beginning of this chapter it was contended that the authors of a policy of neutralizing money have overlooked that dynamic changes are mainly brought about by monetary factors. Neutralizing money, therefore, means maintaining the existing equilibrium. The credit-policy of the "Central Banks" is dictated by the demands of further progress. The difficulty is to adjust the money-supply to the varying supply of savings. The question we have to decide is, shall the banking-system adjust its supply of additional funds to the demand of the consumer or to the demand of the producer.

Being aware of these difficulties Hayek chooses a negative method of proving his proposition by studying the effects

¹ Discussing O. Engländer's theory, compare for the following context *E.J.*, 1932, p. 251; *Prices and Production*, pp. 108, etc.

² Compare Hayek's diagrammatic representations!

of involuntary saving. The natural adjustment of the price-mechanism can be disturbed by movements in the money-supply, whether by the injection of new money into circulation or by the withdrawal of part of the money circulating.¹ If we study the more relevant case of credits granted to producers (as credits granted to producers will finally have the same effect as credits granted to consumers) it is at first sight not obvious how it is possible to outbid those entrepreneurs who found production profitable when the rate of interest was still higher. The reason is that a part of the money-fund now available can be spent on the purchase of intermediate products² which are necessary for the application of lengthening methods. For a time there will be no rise in the trades of consumption-goods because the goods which have already advanced to the lower stages of production, being of highly specific character, will continue to come forward for some little time. The rate of purchases can therefore remain temporarily unchanged; but soon a

¹ Hayek's neglects the withdrawal of part of the money circulating: "The corresponding cases of a diminution of money, he holds, we may neglect, because a diminution of the demand for consumers' goods would have essentially the same effect as a proportional increase of the demand for producers' goods and vice versa" (*Prices and Production*, p. 76).

² Hayek has adopted v. Mises' method of investigation without making full use of it. v. Mises has approached the subject from two standpoints: he examined (a) changes in monetary value and their influence on the structure of production, and (b) the process of adjustment which follows such changes and the causes of which lie in the particular form of capitalistic production. The methods which v. Mises applies are an examination of the reaction of relative prices of commodities on changes in monetary value and a study of the correlation between fluctuations of the rate of interest and the structure of production. v. Mises came to the conclusion that changes in the structure of production can only be brought about by changes in monetary value, but that they cause a temporary disequilibrium until a new equilibrium emerges which is different from the old one. The study of relative prices of commodities teaches that changes in monetary value effect changes in money-incomes. Changes in money-incomes effect a new distribution of real incomes. The further result is an increase in the fund of subsistence on the expense [of those who have suffered from the credit-expansion. The increase in the fund of subsistence enables the application of greater roundaboutness. As, due to entrepreneurial gains, lengthening methods are applied which are not in proportion to the increase in the fund of subsistence, disequilibrium will arise which will check further progress and which will require a process of adjustment.

scarcity of consumers' goods will be felt and prices of consumers' goods will rise. As wages will have risen finally, due to the additional funds of money, a reverse movement may set in.

Hayek now holds that "capital" accumulated by forced saving is at least partly dissipated as soon as the cause of the forced saving disappears. He seems to disregard, however, the movements of relative prices of commodities or at least the change in the real incomes which is brought about by the different reaction of relative prices on a change in money-incomes. Changes in the money-incomes lead to involuntary saving and to the creation of new "capital". Hayek correctly maintains that any theory of involuntary saving presupposes that the new capital must be incorporated into the economic system *in such a way that the prices of the products imputed to it shall cover interest and depreciation*. Hayek, however, holds that this is highly improbable and that any change brought about by involuntary saving will not be a permanent one. But his description of the process seems to be highly improbable too or at least only probable under his very special assumptions. Hayek seems to consider the results of involuntary saving to be twofold. If for certain monetary reasons,¹ he holds, the banks cannot continue their supply of additional money, and the relative demand for consumers' goods has risen in proportion to the relative demand for investment goods, that is to say, in proportion to the additional money which has become available for investment, profits made in the production of capital-goods finally will be offset by profit in the production of consumption-goods. Entrepreneurs will abandon the less profitable trades, and their actions will lead to unemployment in the capital-good industries. This means a diminution in the demand for consumption-goods, so that their

¹ v. Mises has explained that these reasons consist in the disproportion of the increased fund of subsistence to the application of lengthening methods.

supply cannot be sold entirely. Hayek, in his explanation of this process, comes to different conclusions: he admits that involuntary saving only during a certain time will lead to the formation of capital-goods. "Every entrepreneur¹ can increase his real capital only by spending more on capital-goods and less on labour in current production. He can, however, spend more on capital-goods than on wages only so long as wages have not risen in proportion to the additional money which has become available for investment. Ultimately, incomes must rise in that proportion, since even the money used for the purchase of new capital-goods must ultimately be paid out to the factors which make these new capital-goods. But they will rise to the full extent only when all the money has passed backwards through the successive stages of production until it is finally paid out to the factors." *This process requires a certain time which is the reason for a relative increase in capital-goods.* The rise in wages, nevertheless, which is due to the competition of the entrepreneurs for the factors of production, will make it impossible that the prices of the products will cover interest and depreciation. This occurs at the moment no additional credits are forthcoming. The further result is a decline in the proportion to spend on capital-goods. Entrepreneurs must stop adding to the existing stock of capital-goods. But he further concludes that in the time of capital-creation over-investment has taken place. Entrepreneurs will be unable to replace or maintain all the capital which is the product of forced saving. With these words Hayek can only mean that additional credits lead to over-investment. This view, nevertheless, is inconsistent with the view which Hayek has expressed frequently "*that the proportion of capital-creation must relapse to the level of voluntary saving activity, unless new credits are granted bearing the same relation to the new*

¹ Compare Hayek, *E.J.*, 1932, pp. 243-5; *Monetary Theory and Trade-cycle*, pp. 209 ff.; and *Prices and Production*, pp. 76-86. (2)

total of money-incomes as the first injection bore to the former total.”¹ The view that a part of the capital, produced by forced saving, will be destroyed through the opposition of the individual against compulsion as soon as this compulsion ceases and that the new equilibrium can only be established in proportion to the amount of voluntary saving which has taken place, is incorrect. If additional credits or “forced saving” lead to the formation of capital this does not imply that parts of it should be destroyed. It is conceivable that parts of it are unused and this is what really happens, but it is inconceivable that parts of the newly formed capital are destroyed or, as Hayek explains, are used for consumptive purposes. Hayek overlooks two facts:—

(a) The highly specific² character of investment-goods which makes it impossible to use them in another application.³

It is therefore ridiculous to maintain that capital accumulated by forced saving will be at least partly dissipated and it would be more correct to state that there will be a temporary disequilibrium because of over-investment. Hayek is aware of these facts without nevertheless drawing the logical conclusions from it. He himself admits that specific goods cannot be so easily shifted in another application, losses or gains will occur with regard to the change in the demand side (whether the change concerns producers’ or consumers’ goods) and with regard

¹ Compare Hayek, *Monetary Theory and the Trade-cycle*, p. 215, and *E.J.*, 1932, p. 244.

² Hayek himself draws our attention to this fact. He himself suggests an examination of the price movements of specific goods and of their sensitiveness towards dynamic changes. He, however, disregards the significance of such movements for the trade-cycle, and that the highly specific character of certain investment-goods is the cause of disequilibrium when demand shifts from lower stages to higher stages and vice versa (compare *Prices and Production*, pp. 88, 72–3, 71.)

³ This highly specific character of certain goods will always be the cause of some disequilibrium, if demand shifts from consumption-goods to producers’ goods and vice versa.

to their position in the productive process. A change in the demand side due to an increased rate of saving, for example, will cause losses in the lower stages and also in the production, which furnishes these goods for the lower stage. Disequilibrium may therefore be rather the result of voluntary than of involuntary saving, as additional credits enable profits to be made in all trades.¹

(b) He overlooks that all his arguments were made under the assumption that all incomes are spent on consumption-goods. If some parts of the incomes are saved, the new standard of the productive process can not only be partly maintained, but it can also be replaced. The reason for the disturbance of the productive prices was the application of methods which were not in proportion to the fund of subsistence and which therefore had to be abandoned. Saving, therefore, would serve the maintenance of the new proportion between producers' goods and consumers' goods. It would mitigate the unwholesome results of a boom and would let adjustment run more smoothly. Saving, begun at the climax of a boom, would prevent profits made in the production of capital-goods from being entirely offset by profits made in the production of consumption goods. It would partly check unemployment in the production of capital-goods; accordingly no consumers would be lost for the market because, as Hayek correctly maintained, unemployment in the one trade would mean a diminution of purchasing power with the result that even the supply in the other trade could no longer be sold in the same amount, unemployment in the production of consumption-goods being the ultimate result. In this sense we have to understand v. Hayek's theory of the trade-cycle.

¹ Compare Engländer's and Durbin's theory of the trade-cycle. .

§ 3

Engländer's Theory of the Trade-Cycle

Engländer's theory of the trade-cycle refutes the proposition that a steady development could be maintained if the banks would not lend more than has been deposited with them as savings. It further maintains that the general price-level should be adjusted to the increased volume of production. Engländer¹ admits that savings can raise the general standard of civilization and can serve the maintenance of lengthening methods at the climax of a boom, but one must, nevertheless, be aware that savings made in a period of depression can reinforce depression because of losses in the production of consumers' goods which must necessarily influence the production of producers' goods. Engländer holds that savings cannot finance a boom because of the existence of unemployed resources in the capital-goods industries. Given full employment, which only exists at the climax of a boom-period, the assumption is appropriate that profits in consumption-goods industries are not reconcilable with profits in the capital-goods industries. Profits in the one production are offset by losses in the other. Given unemployment in the capital-goods industries—the type of unemployment which clearly exists during a period of depression—it follows at once that the view consistent with the doctrine² of value of the Austrian school that

¹ Compare *Preise und Konjunktur*, 1931, pp. 31, 49, 51, 36, 37; also *Theorie der Volkswirtschaft*, pp. 128, 167, 199, 293, 156 ff., 164 ff. Durbin, pp. 134–145, 86, 87, 84, 85, etc. Compare Menger on the value of Producers' goods, pp. 77–152, 17 ff. Böhm-Bawerk, i, 2nd ed., pp. 262–5. Compare also ii, iii Buch, i Abschnitt, ch. "Wert u. Kosten".

² Durbin has considered this reasoning as the only contribution of theories of under-consumption, which nevertheless follows also from the Austrian theory of value. According to the Austrian doctrine of value production-goods derive their value from consumption-goods. It is logically consistent with this theory to assume that a change in the demand of the consumer concerning present and future goods must influence in the short period the production of production-goods.

profits in the production of consumption-goods and the real output of capital move together can be justified by the most rigid logic. The function of saving is different in barter-economy and in a money-economy. Saving means shifts from consumption-goods to production-goods, but it does not mean the employment of all resources available. Saving therefore only means a change in the method of application of already employed factors and means of production. In a system of division of labour the extension of one trade will necessarily be at the expense of another if the money-spending power of the consumer remains constant. The production of other goods must be reduced if the money-spending power of the consumer does not increase proportionately. Engländer explains why one trade is dependent on the other or why prices are related to each other by examining the interconnections of relative prices of commodities. We have discussed his theory of "relative prices" in Chapter 3 of this thesis where he treats the problem from the point of view of whether *the general price-level shall be adjusted to the increased volume of production*. Some trades, he holds, will always suffer from a general expansion of production. Only if these trades have not suffered losses can a general upward movement be possible. Changes in the structure of production must be facilitated by changes in the amount of money. Engländer's theory of the downward movement is the following. He distinguishes three kinds of changes :—

- (1) Monetary changes.
- (2) Changes on the demand side.
- (3) Changes in the efficiency of machinery, etc.

As I have already mentioned, Engländer has two different views on economic development. He maintains that the amount of previous savings enables us to attain to a higher standard of productivity in a barter-economy, but that in a

capitalistic system savings cease to have this immediate function. Additional credits take the function of saving. The function of money is twofold : it serves the increase in the fund of subsistence by forcing people to involuntary saving, but it also serves the employment of unused (idle) resources and original factors of production.¹ It seems to me of some importance whether loans are granted for entrepreneurs *producing consumption-goods* or for entrepreneurs *producing producers' goods*. On the different reaction of these trades on additional credits lies the whole problem of the trade-cycle. The view was recently stated that saving means a decrease in the demand for consumption-goods. The fact cannot be denied that in a boom-period capital-good industries as well as consumption-good industries make profits and that during a depression there is a stagnation in the productive activity of both trades. The explanation of this phenomenon is the correlation between the fall in prices, due to an increase in the supply of these goods and the rise in the money-costs. The problem is a problem of money-costs. The equivalent of an increase in products in a barter-economy is a decrease in money-costs in a money-economy. The decrease in money-costs is made possible by an increase in the amount of capital-goods. The problem to decide is that the reduction in money-costs is not as rapid as the decline in prices which is due to the increase in the supply of these goods. The reason that money-costs cannot be reduced in proportion to the decline in prices is the competition ² of too many entrepreneurs. Competition causes the prices of means of production to rise and checks the proportionate reduction in money-costs. On the other hand there is a possibility of over-investment, that is to say a possibility of a disproportion between money-costs and

¹ See v. Mises and Schumpeter on this subject.

² See Schumpeter, *Zyklus der Konjunktur*, and Durbin, *Purchasing Power and Trade-depression*, pp. 90, 91, 93, 149, 153.

prices. Engländer has not always emphasized enough the importance of these observations, although we can deduce some such statements from his theory of saving. Nevertheless we may say that Engländer's ideas are very similar to Durbin's description of the trade-cycle. Engländer states that a decrease in the demand for consumption-goods can lead to a stagnation in the investment activity and therefore to trade-depression.¹ On the other hand he is aware of the increase in capital-goods (due to roundabout methods), which means a reduction in costs. The problem of costs he treats as changes in the efficiency of capital-goods, the problem of saving as changes on the demand-side.² Engländer first examines the effects of an increase in money and which persons will be benefited by an increase in money. It depends consequently upon which classes of a population³ are to be granted additional credits. An increase in money does not affect all classes equally—some may have the immediate benefit which they lose in the long run. If additional credits are granted to the capitalist, he may employ these credits for his immediate consumption, or use them in his enterprise, or begin a new enterprise. If capitalists use additional credits for production, they exercise the function of entrepreneurs.⁴ Only loans to entrepreneurs are of economic advantage as they can repay their debts, due to increasing physical productivity. If the Central Bank (and for the Central Bank these questions are of importance) creates additional credits, it creates simultaneously the obligation to repay these credits in a certain time. If it grants additional credits to entrepreneurs

¹ Compare Engländer, *Preise und Konjunktur*, p. 28.

² Changes on the demand side are only relevant if they consist in a change of the preference of present or future goods.

³ Engländer distinguishes three classes: (1) capitalists, (2) entrepreneurs, (3) consumers.

⁴ The same occurs if the labourer (consumer) uses these additional credits for production. Compare Engländer, ii, p. 147, etc. Engländer clumsily examines how each class may use its additional credits instead of examining simply whether such loans are granted to producers or consumers.

they will at the moment increase the wages of their labourers. These labourers reinforce the demand for other commodities, and due to a general increase in the money-spending power it flows back to the entrepreneur who can repay his debts.

On the other hand, the Central Bank could credit additional money directly to the consumer. Such loans are of no value as they strengthen the position of the consumer only for a short time. They all flow towards the entrepreneur, who may use them for new investments. The consumer, nevertheless, would be unable to repay his debts in time, although this money would partly flow back to him if the entrepreneur uses it for new investments. A characteristic feature of all additional credits is the fact that they enable a stronger position at the market. The problem is for how long one is able to maintain this position. The possibility of obtaining gains will end when the demand for the articles of the gaining trades has become inelastic. Engländer here relies on his former observation that the money spending power (money income) of the buyer is decisive for the sale of a certain amount of commodities.¹ Although the real income as well as nominal income of the labourer (consumer) rises with every expansion of production, the latter will at a certain point abstain from future purchases, the reason being that he has to buy other important commodities. The increase in the quantity will be due to the fact that the gaining trades will induce other competitors to compete who in their turn will overstock the market with commodities. Competition will be increased by another important fact. Considering the connection between additional money and already existing capital, Engländer finds that the first result is a decreasing rate of interest which will induce capitalists

¹ A certain quantity of commodities can only be sold to a certain class of buyers. The money-price of a commodity must fall to a certain extent in order that classes of buyers with lower money-incomes are induced to buy. The decline in price is determined by the money-incomes of the class of buyer to which the whole quantity will be sold and by the height of costs.

either to use this money for the purchase of goods at the market where it flows in the profitable trades or to invest it in the profitable trades. The further result is that too great an amount of commodities is offered at the market. As a further consequence it was already pointed out that the money-spending power of the consumer becomes insufficient to meet the increased supply of commodities which therefore cannot be sold.

Engländer, as we have seen above, has only examined the monetary side of the trade-cycle. He distinctly pointed out that the upward movement bears the germ of future depression. It was therefore necessary to show the influence of monetary changes on the structure of production. Engländer expressed the view that upward movements usually begin in one trade and may be due to changes in the demand side or changes in the efficiency of fixed capital. Such changes can induce the Central Banks to grant loans more freely. Changes on the demand side in contrast to monetary changes or changes in the efficiency of fixed capital both depend on the height of the money-rate of interest. Changes on the demand side consist either in a preference of present or in a preference of future goods by the consumer. Changes in efficiency consist either in a transition from handwork to machine-work or in a transition from less efficient machinery to machinery yielding greater physical output or machinery of greater durability. All these changes consist in a transition from more to fewer stages or vice versa, changes in the demand side ¹ in a transition from a commodity produced in more stages to a commodity produced in fewer stages. A transition from more stages to fewer stages causes unemployment, and causes "capital" invested

¹ We may also speak less clumsily of transition of goods of higher order to lower order and vice versa, or of technical improvements corresponding to Engländer's term "changes in efficiency of fixed capital". Stages of production we call the interval of time every production requires to fulfil its task.

in these trades to lie idle because fewer producers' goods are demanded if only fewer stages are necessary for production. Provided that the reduction in costs yields gains, other entrepreneurs will invest their capital in these trades. They consequently will demand more producers' goods and employ more labourers. On the other hand a transition from a production of less stages to a production of more stages has a contrary effect. More producers' goods are demanded and more labourers are employed. Wages rise and more other goods will be demanded. Accordingly a boom might be initiated by the increasing profitability of one trade which is due to changes on the demand side or technical improvements and may lead to a general expansion of production. The question arises whether a general upward movement can be financed by savings of previous periods. Undoubtedly trades are dependent on each other. Gains made in the one trade must correspond to losses in the other. If more consumers' goods are demanded, in the short period obviously fewer producers' goods can be produced and if more producers' goods are demanded fewer consumers' goods can be produced.¹ Without an increase in additional money (in the general price-level) therefore, a general upward movement seems impossible because of the permanent possibility of idle resources. What on the other hand are the causes of depression? Engländer explained the downward movement by over-investment which goes hand in hand with an unreasonable credit-expansion. Profits in the capital-goods industries lead to increasing investment in these industries. Producers' goods are produced, especially such of greater durability,² which enable a greater increase of goods than is actually demanded.

¹ These observations prove that there must be permanent unemployment and idle resources in some trade, even if this state would only be temporary. Engländer, as we see, has a view of the trade-cycle contrary to Hayek. Full employment of all factors of production exists only at the climax of a boom-period.

² Goods of specific character.

The investment in producers' goods of greater durability is facilitated by a low rate of interest and by an expansion of credits which cannot sooner or later be effected in cash-money. The banks, forced by severe competition, precipitate the upward movement by granting their credits too freely. For these reasons the banking-system will be unable to respond to the permanent demand for credits at a certain time. Increasing competition will cause the rate of interest to rise and profits to diminish. Therefore, too great an amount of commodities will be produced, which will lower prices so that these are no more in proportion to their costs. The further result will be reductions in cost which will set factors of production free, and will cause resources to lie idle. This will last so long until gains made in one trade will result in a new upward movement.

Which policy now does Engländer advocate to check the permanent upward and downward movements of the economy if any creation of money will for a time employ all unused resources, but in the long run will end again inevitably in a depression? The policy Engländer defends is the following: New ideas and methods ("innovations") have to be financed by new money in order that no trade is affected by an expansion of a certain production. If then all factors of production are utilized a process of saving can maintain the upward movement until other new ideas and inventions lead to further progress and a new equilibrium. Engländer's idea ¹ is the following: An increase in additional money leads to the application of lengthening

¹ Compare v. Mises, pp. 373, 368-374. v. Mises holds that an artificial lowering of the natural rate causes more lengthening methods to be applied which for various reasons cannot be maintained. If, then, shortening methods are applied, capital is invested in the lengthening methods which cannot immediately be used in other new applications. In a production of different stages original factors of productions are non-utilized. This especially happens if competition has caused too great an application of roundabout methods; many roundabout methods, therefore, which were just begun cannot be continued. Engländer's theory of the function of saving could be considered as a further development of this idea of v. Mises.

methods which do not correspond to the actual fund of subsistence. The increase in the fund of subsistence is effected by compulsory saving. If due to a shortage in consumers' goods there is a tendency to re-establish the old equilibrium-rate (between present and future goods) this tendency could be counterbalanced by a process of saving. This process of saving could maintain the new proportion between present and future goods and the lengthening methods could be further continued. How this process of saving can take place is better demonstrated by Hayek. Engländer only indicates that it will be effected by the application of more roundabout methods.

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¹ Special references are given in the context of this thesis.

² *E.ŷ.* = abbreviation for *Quarterly Economic Journal* or the *Economic Journal*.

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